

Joshua Crawford



PORTFOLIO

Fall 2022- Fall 2024

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1st Year, Fall 2022	3rd Year, Fall 2024
Spring 2023	Spring 2025
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Spring 2024	

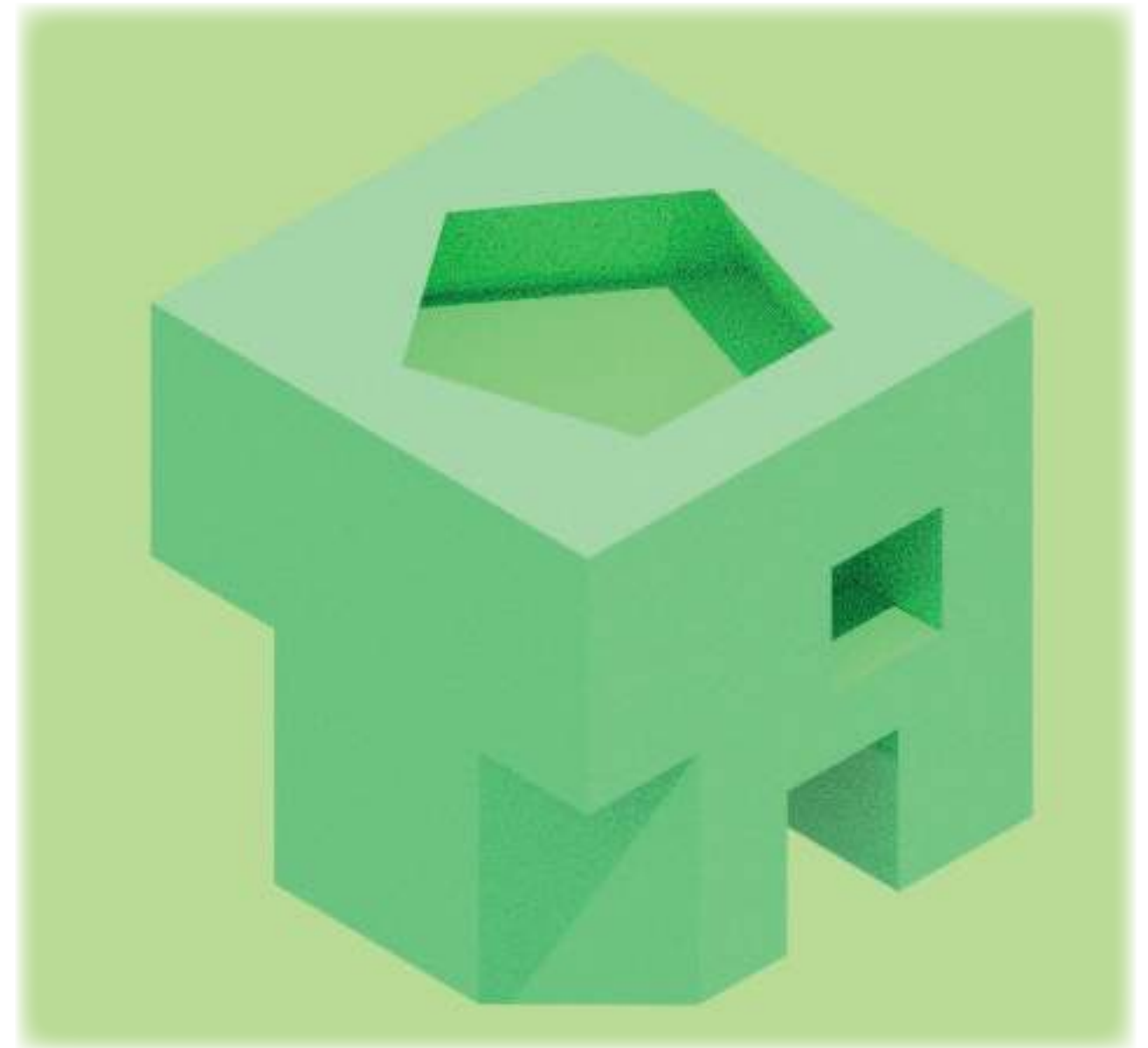
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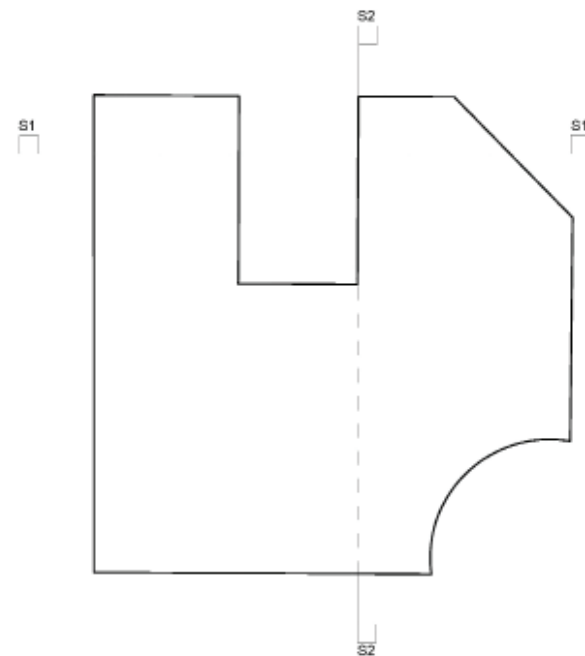
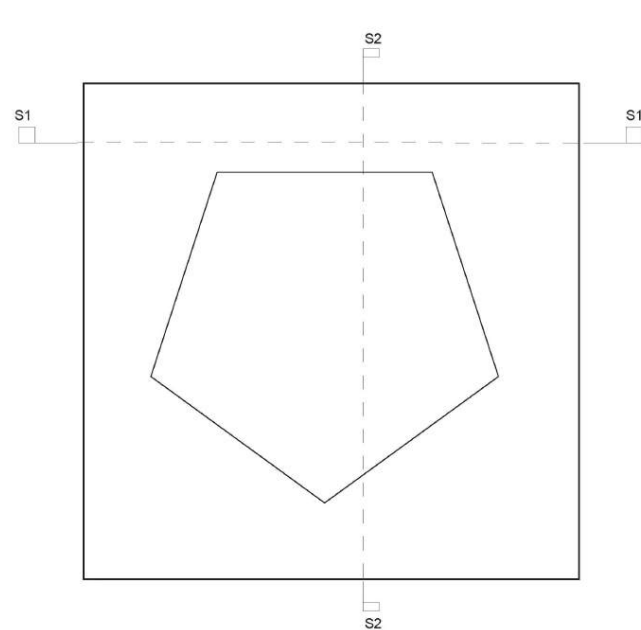
CUBES

STUDIO: JILL LECKNER
FALL 2022

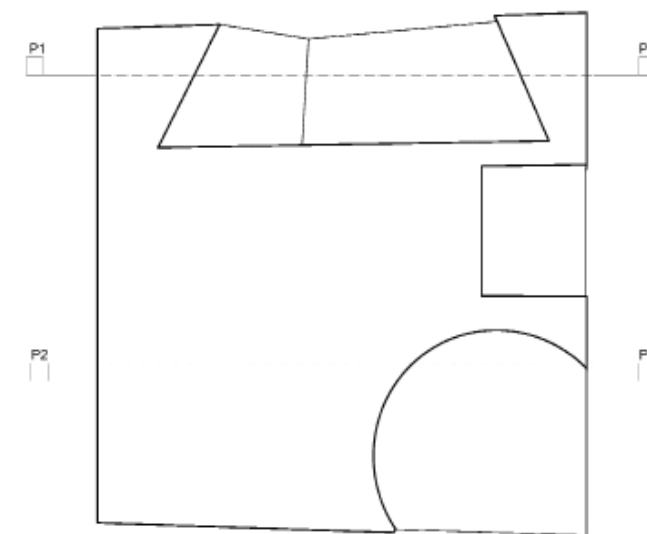
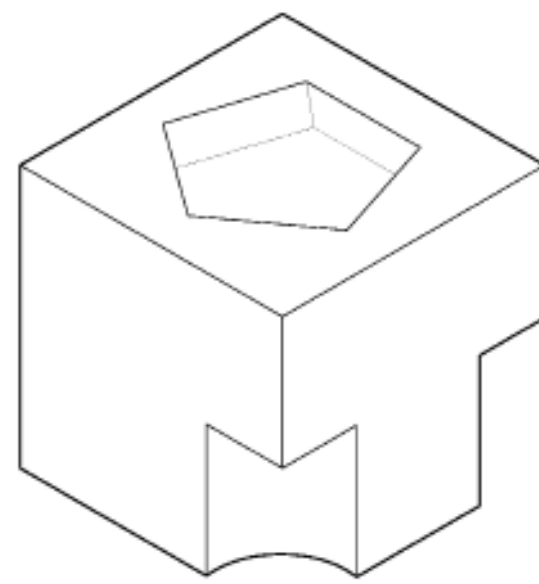
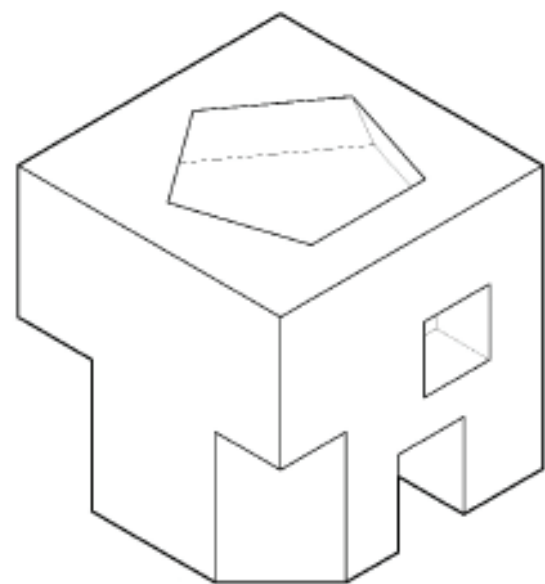
In my second workshop exercise, I used my newfound knowledge of 3D modeling tools to produce three 3D composition's out of abstract geometric volumes. An 8x8x8in cube is used as a base and other geometries are subtracted from it. After, we made drawings in Rhino 3D using lineweights. It shows off two plans, two sections, and two isometric views.



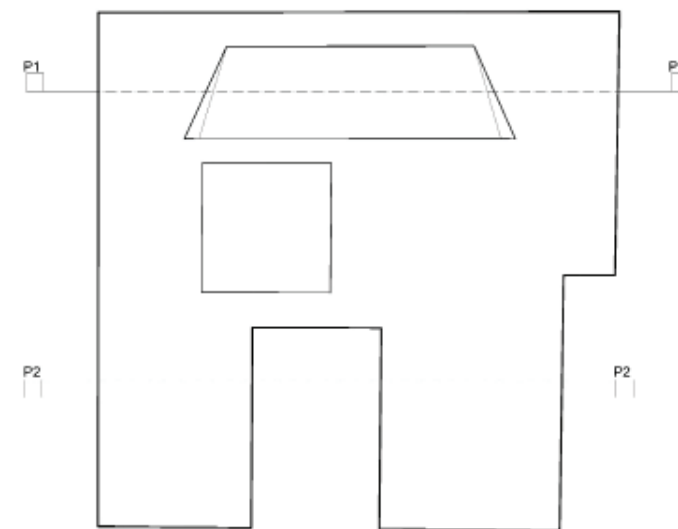
Lime Pentacube



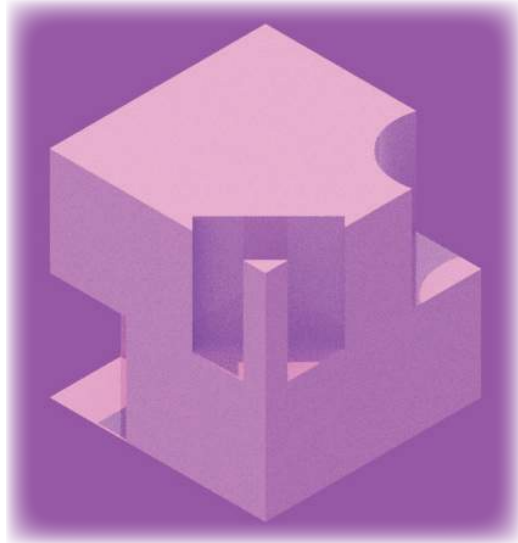
Drawings for Lime Cube: Plan 1 and 2



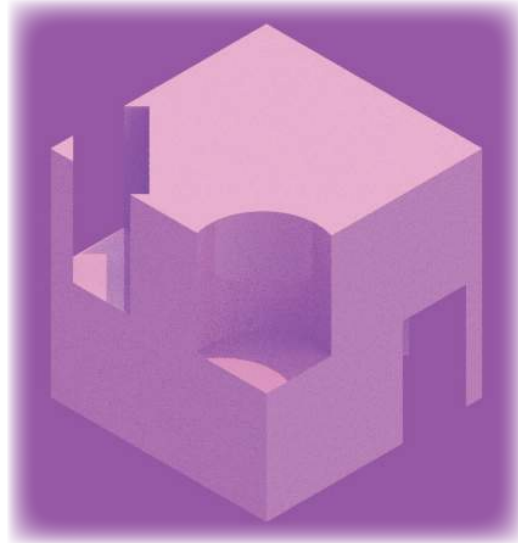
Section: Left



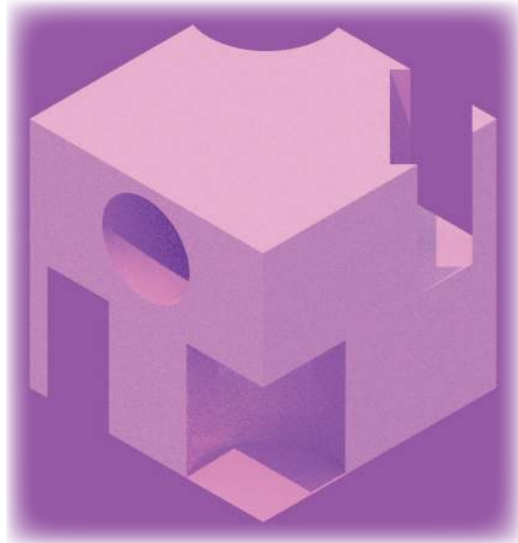
Section 2: Front



Isometric: NE Perspective



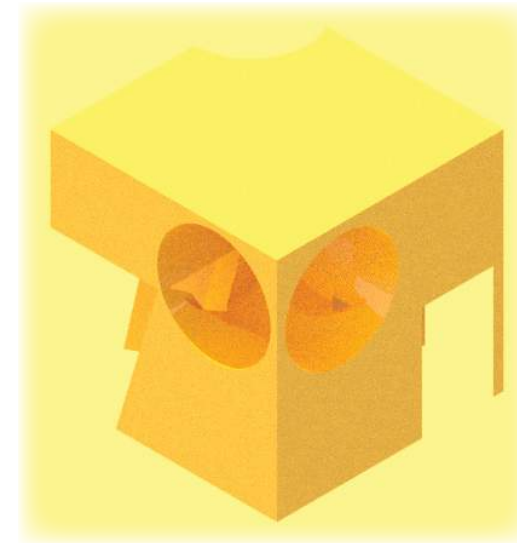
Isometric: NW Perspective



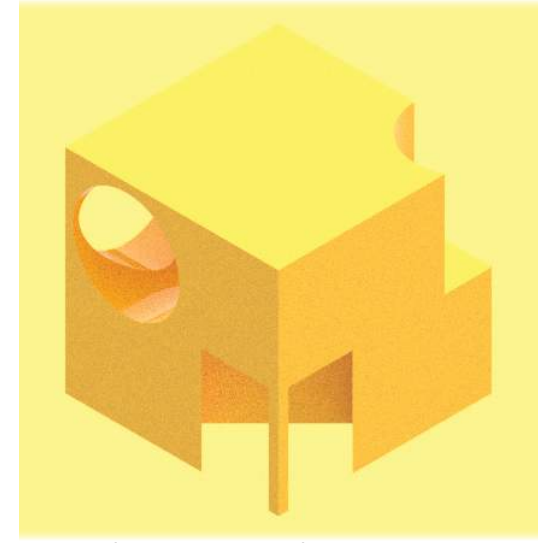
Isometric: SE Perspective



Isometric: SW Perspective



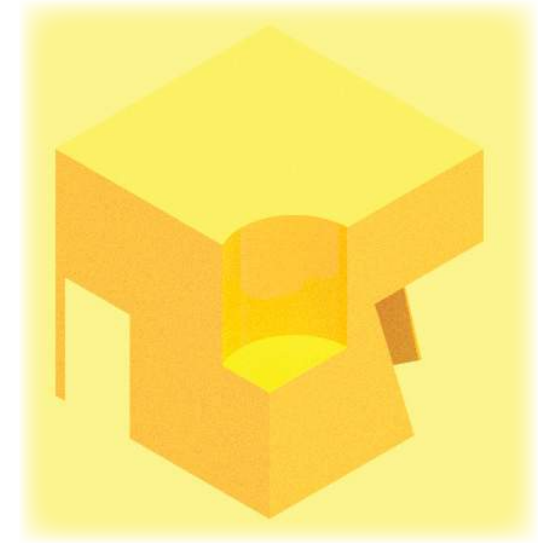
Isometric: NE Perspective



Isometric: NW Perspective



Isometric: SE Perspective

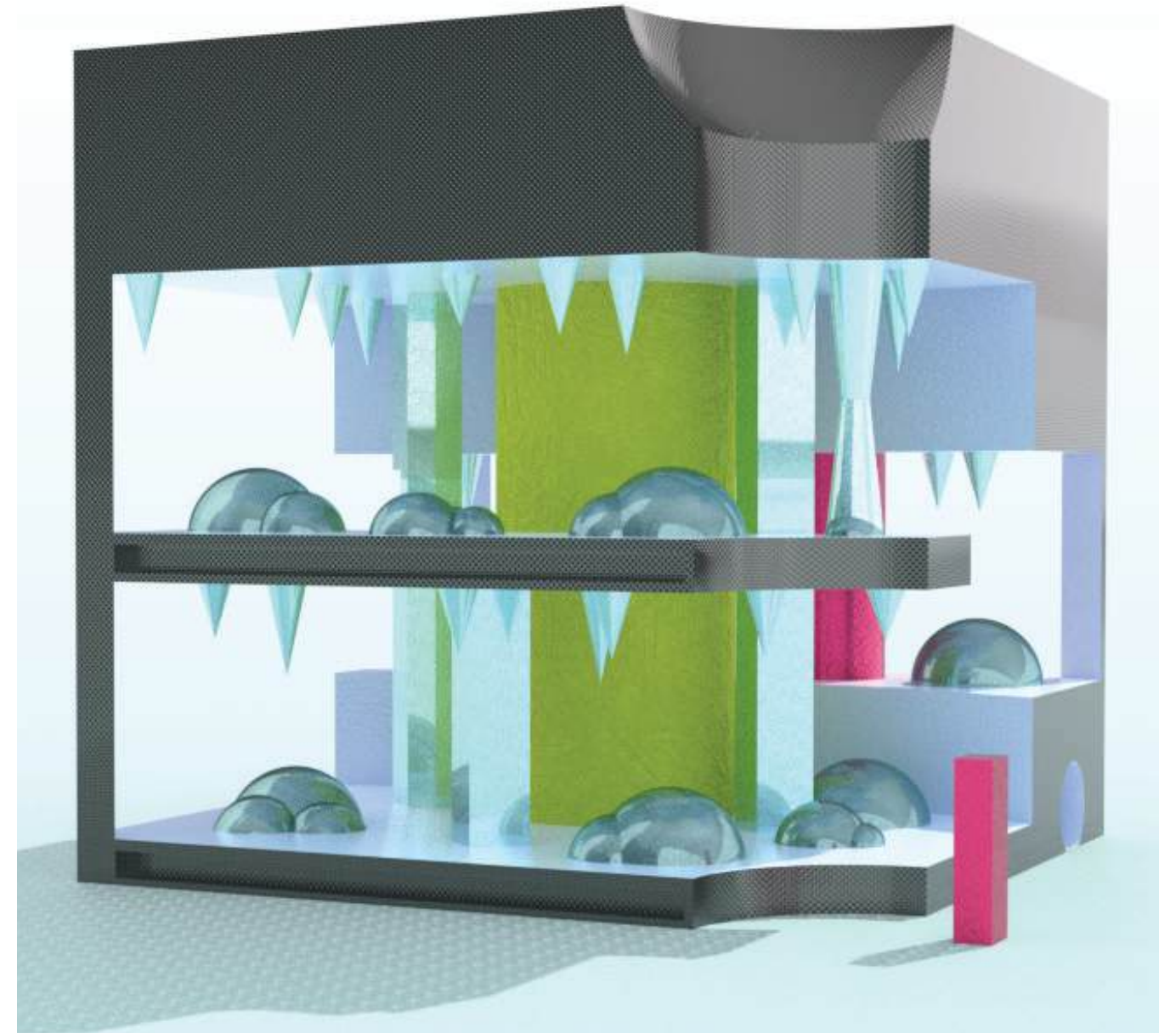


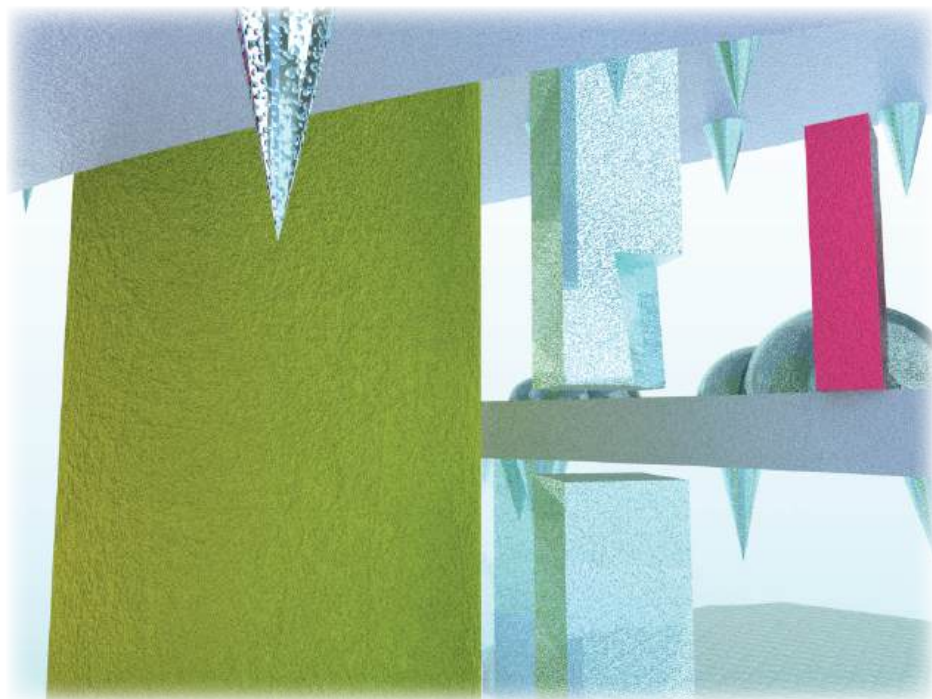
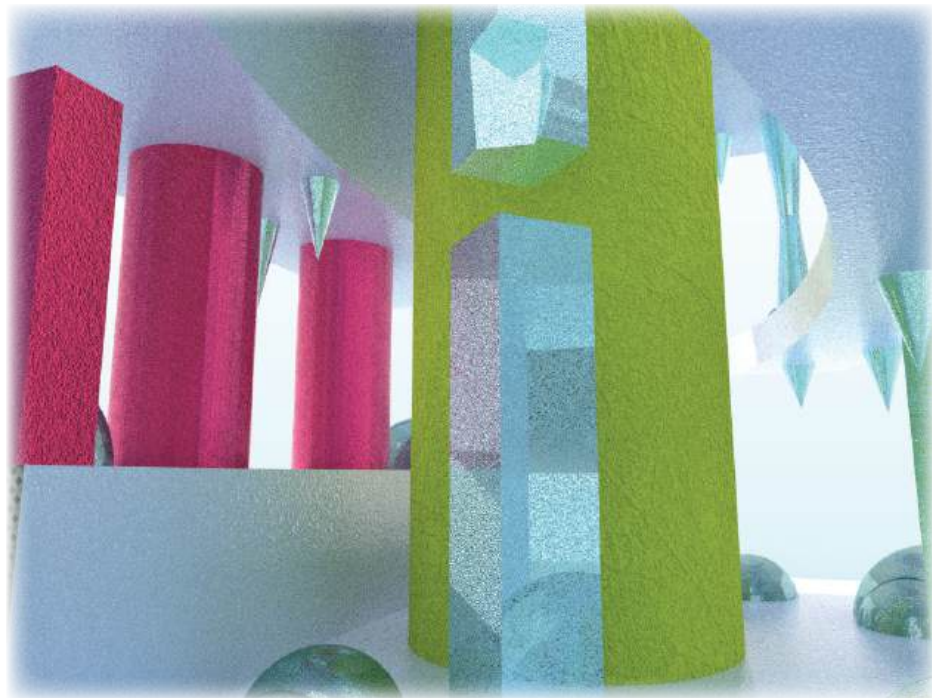
Isometric: SW Perspective

CRYSTALS

STUDIO: JILL LECKNER
FALL 2022

"Crystals" is the 7th and last workshop of the fall semester. "Crystal Palace" resembles a structure somewhat frozen in time. The palace gets its name from the crystal-like ice columns. In this workshop I familiarized myself with rendering techniques and processes in Rhino, as well as understand how to simulate light and materials. A scale figure is included.

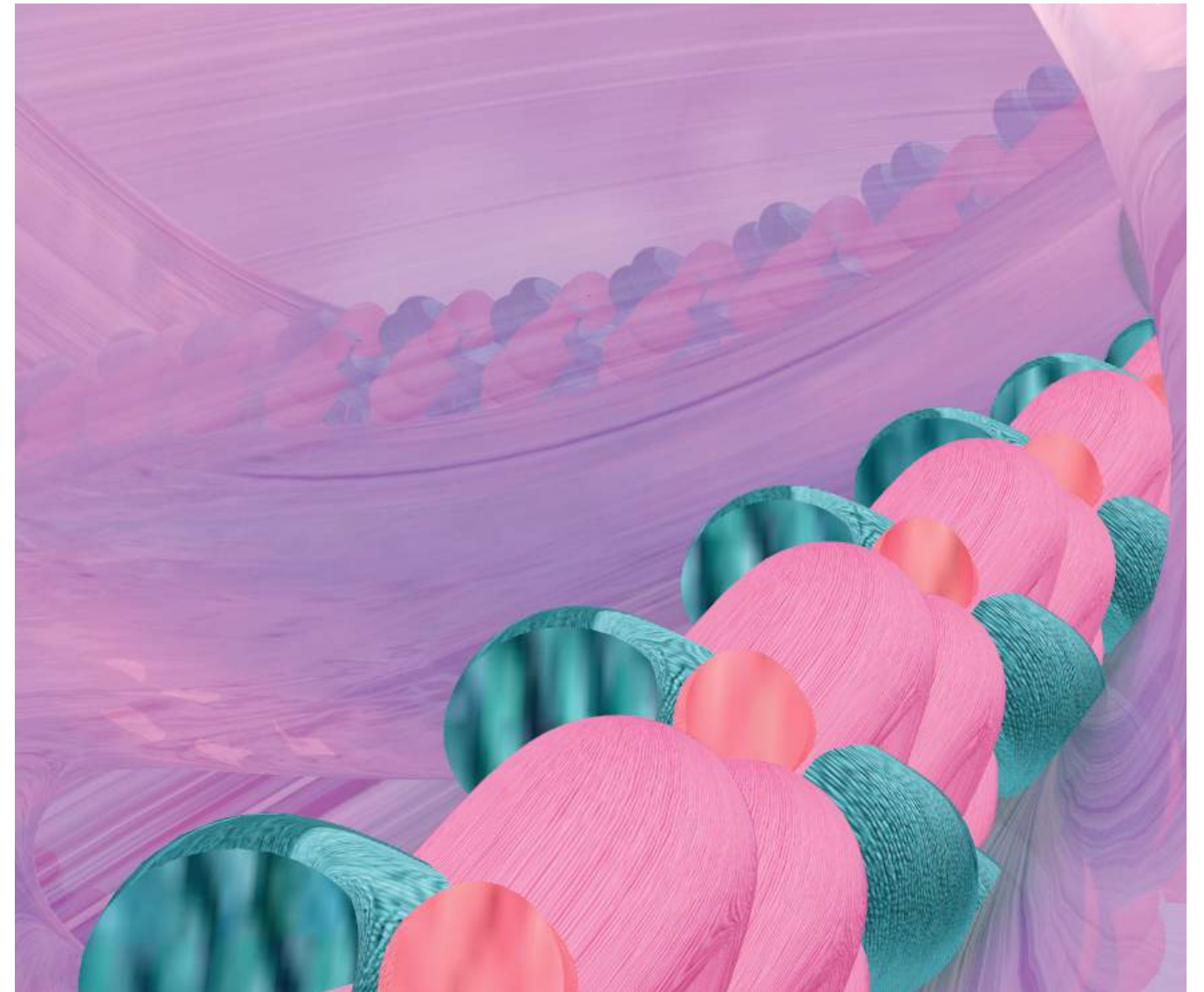




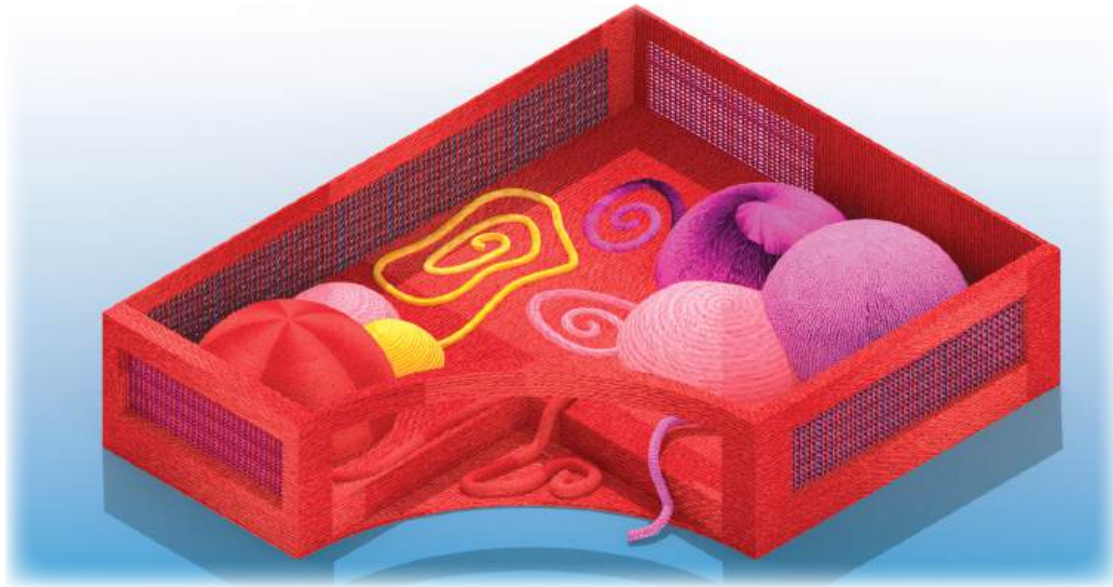
WEAVED

STUDIO: JILL LECKNER
FALL 2022

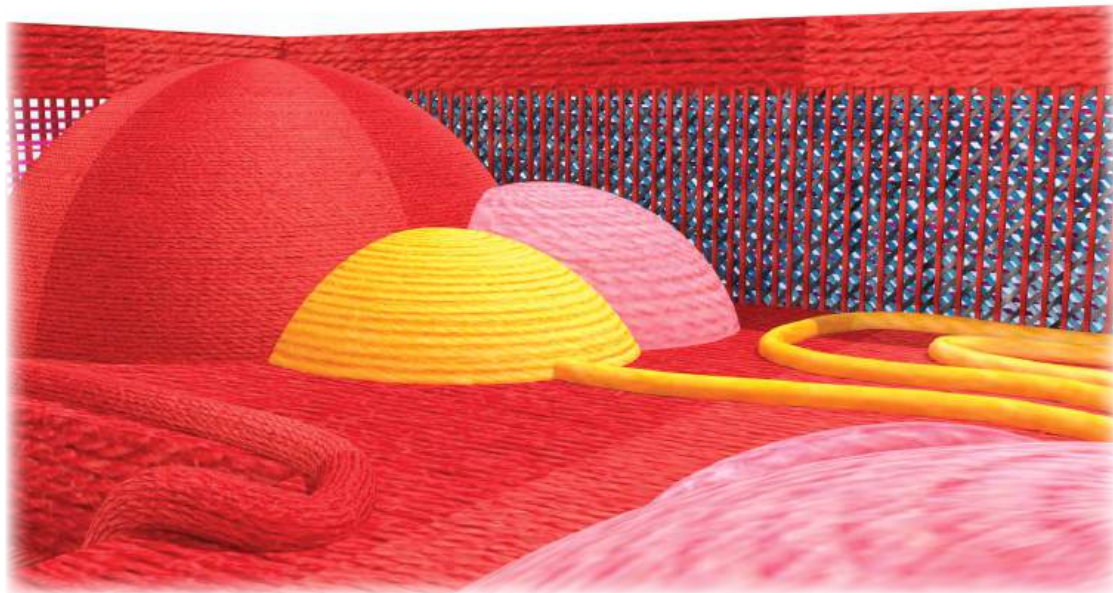
“Weaved” is the first series of “Abstract Compositional Studies” outside of workshop. These compositions are inspirations from the “Woven Cosmos” exhibition done by the artist “Hella Jongerius”. All of the compositions resemble an act of weaving, showing off multiple abstract forms that overlap, interlock, and flow through one another.



Candy Path, interior



Yarnbox



Interior close-up of Yarnbox



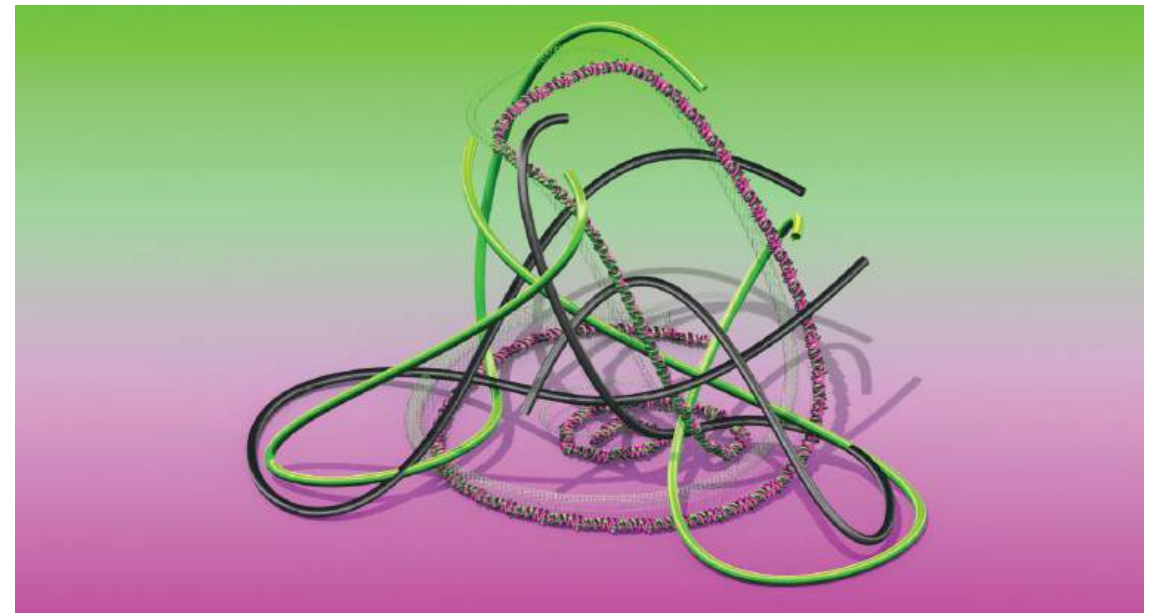
Hanging Rope-Leather, inspired from "Dancing a Yarn"



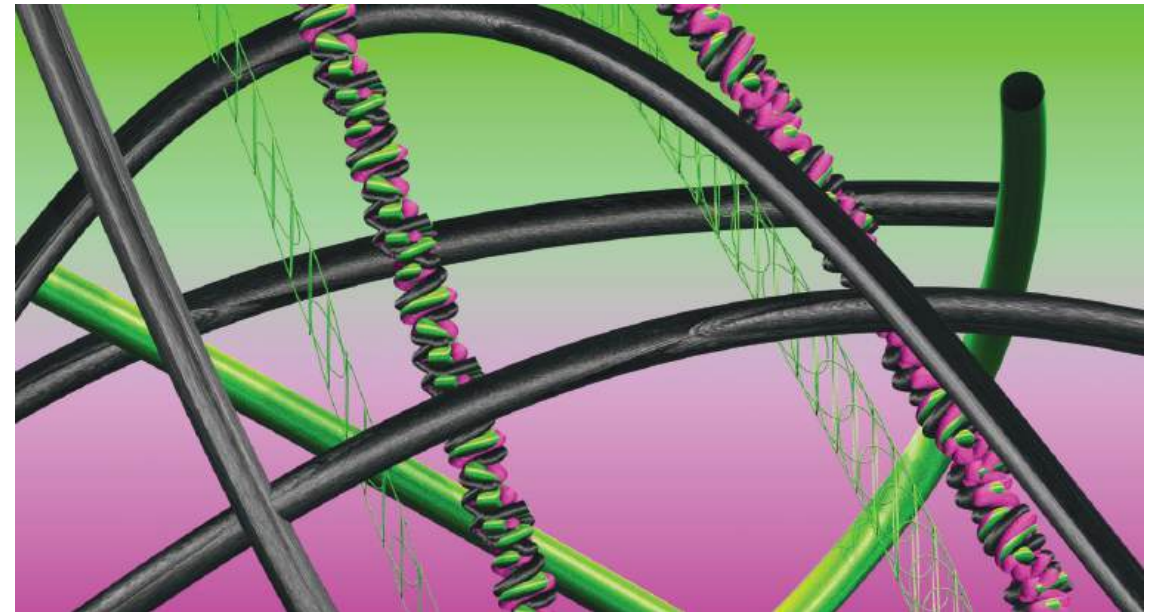
Yarn Carnival, inspired from Hella Jongerius's "Cosmic Loom"



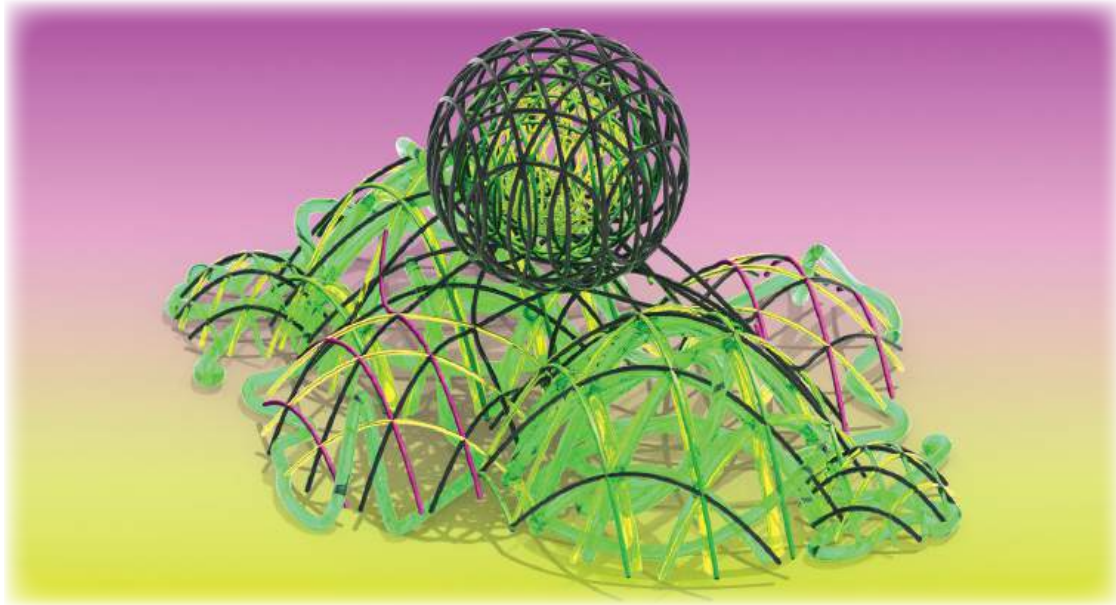
Yarn Carnival, close-up on strings



Venom Crossings



Venom Crossings, close-up



Neon Webbing



Trapped Jello



Neon Webbing, close-up

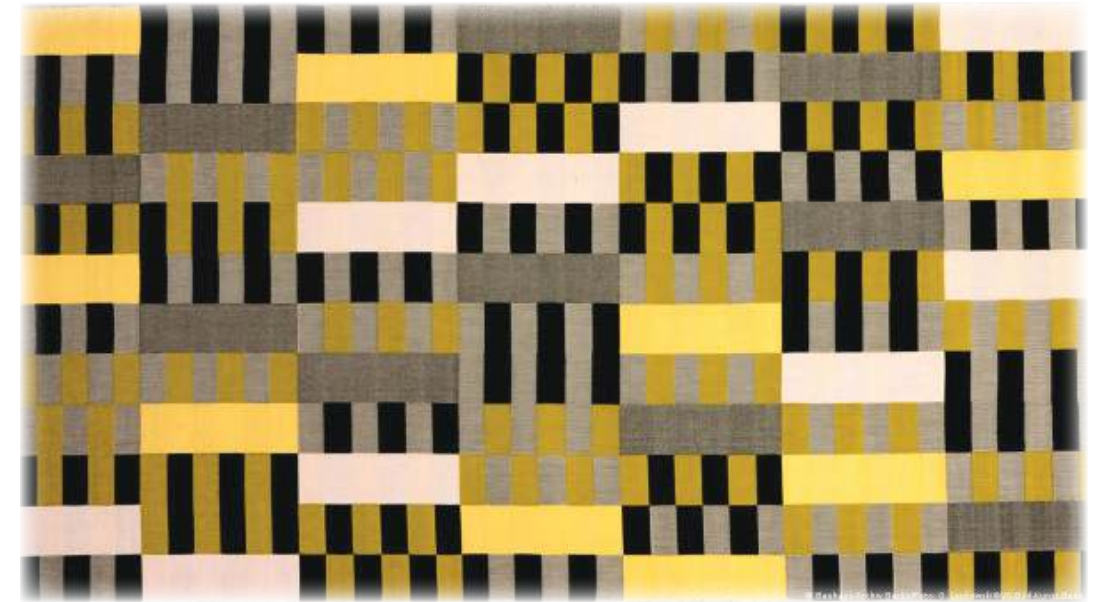


Trapped Jello, interior view

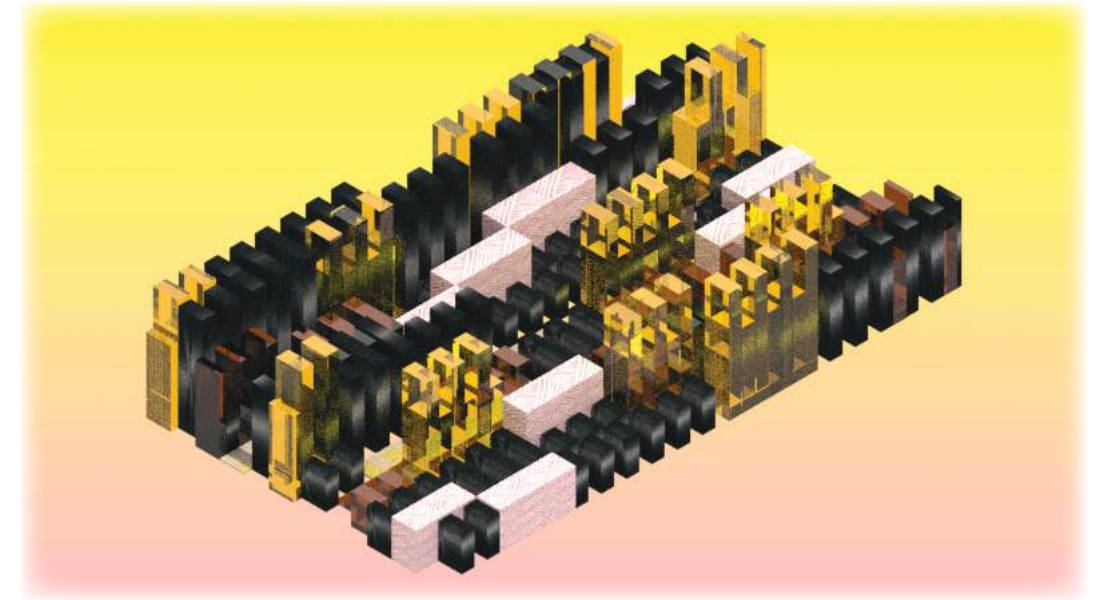
REFLECTIONS

STUDIO: JILL LECKNER
FALL 2022

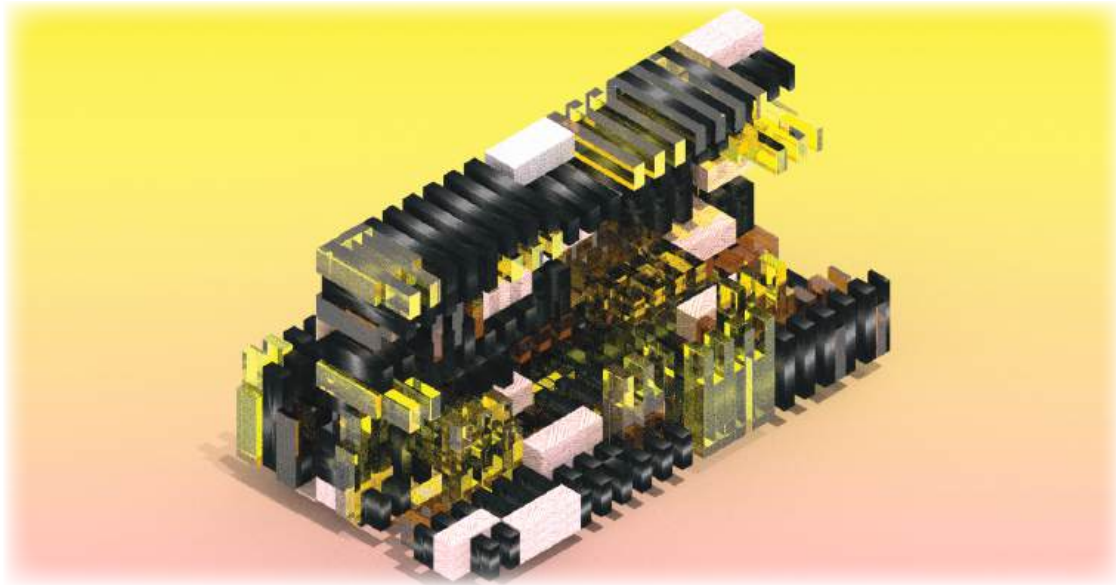
“Reflections” are a series of aggregation studies that are direct inspirations from the “Bauhaus textiles” done by the artist Anni Albers. Similar to “Weaved”, these compositions also tie towards weaving. Here, you are looking at the extruded base of all the variations. Such forms like crossing, stretching, skewing, and a fictional landscape are featured in this section. The future variations serve the purpose of giving more density to the composition, giving it some nice viewpoints. I used various materials in the compositions to add some contrast, I took yarn from the previous woven studies done and mixed it in with glass/gem materials. When it comes to the fictional landscape, its fun to see exactly how those materials mesh in with the pebble-like material used for the ground.



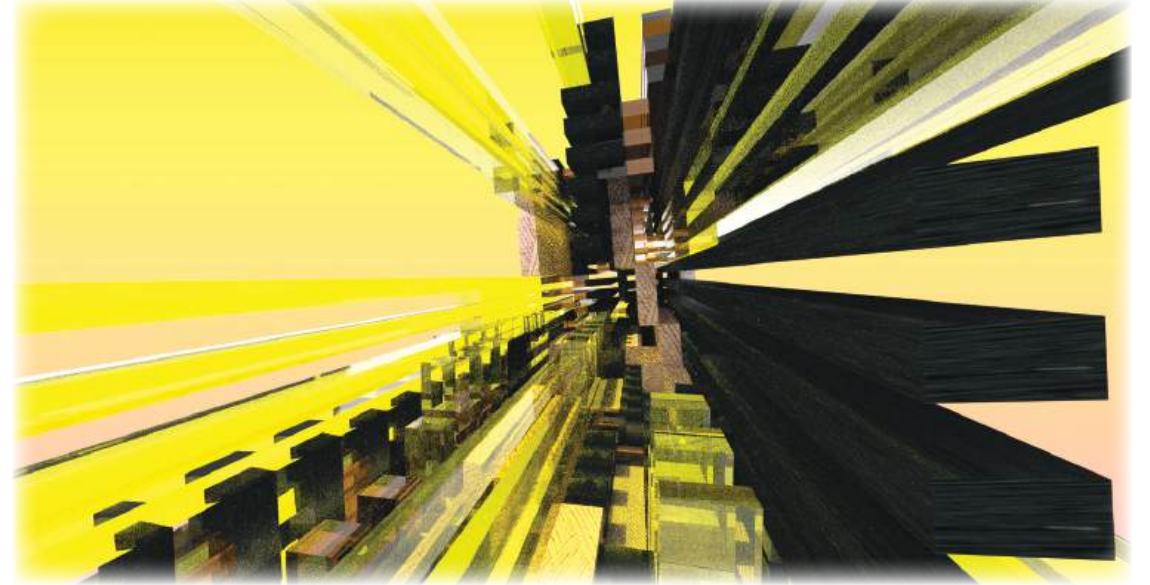
“Black White Yellow” by Anni Albers as reference.



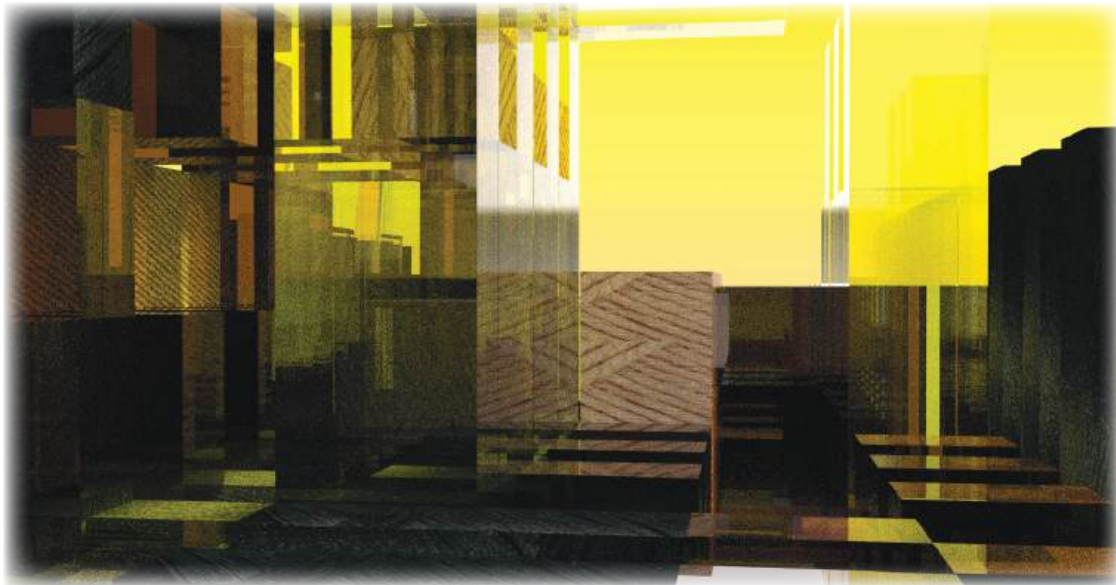
Extruded Base Form before further density is added.



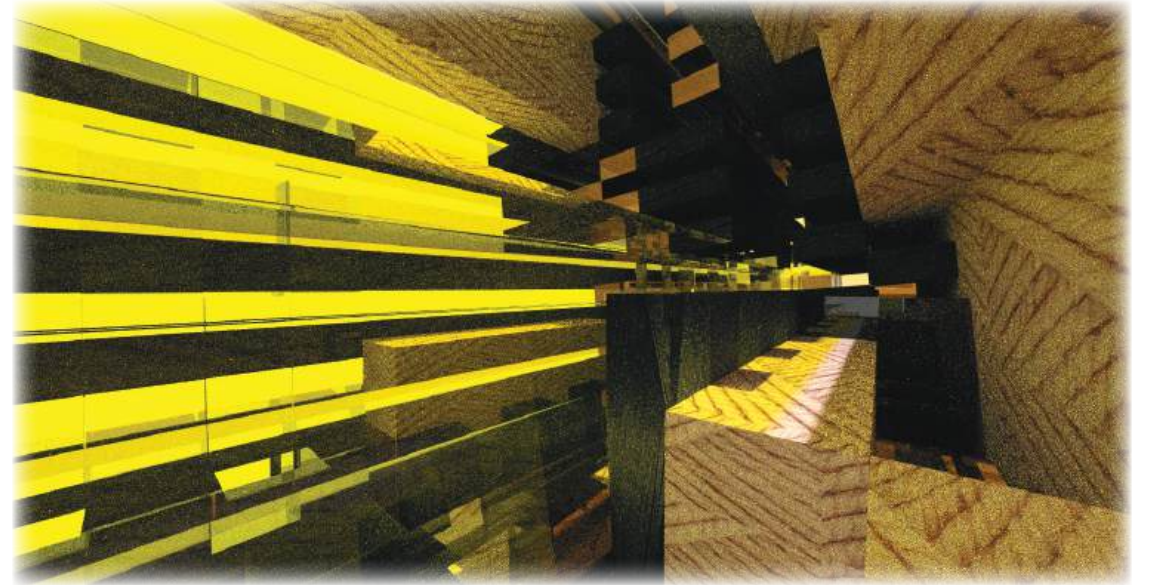
Cross Form, more density added



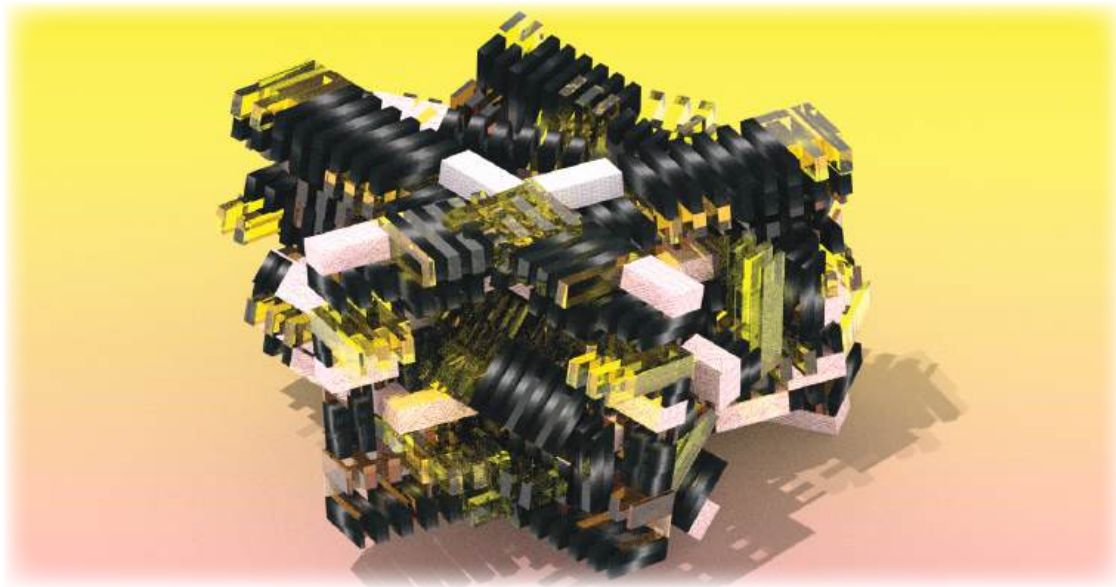
Stretched Form, interior perspective



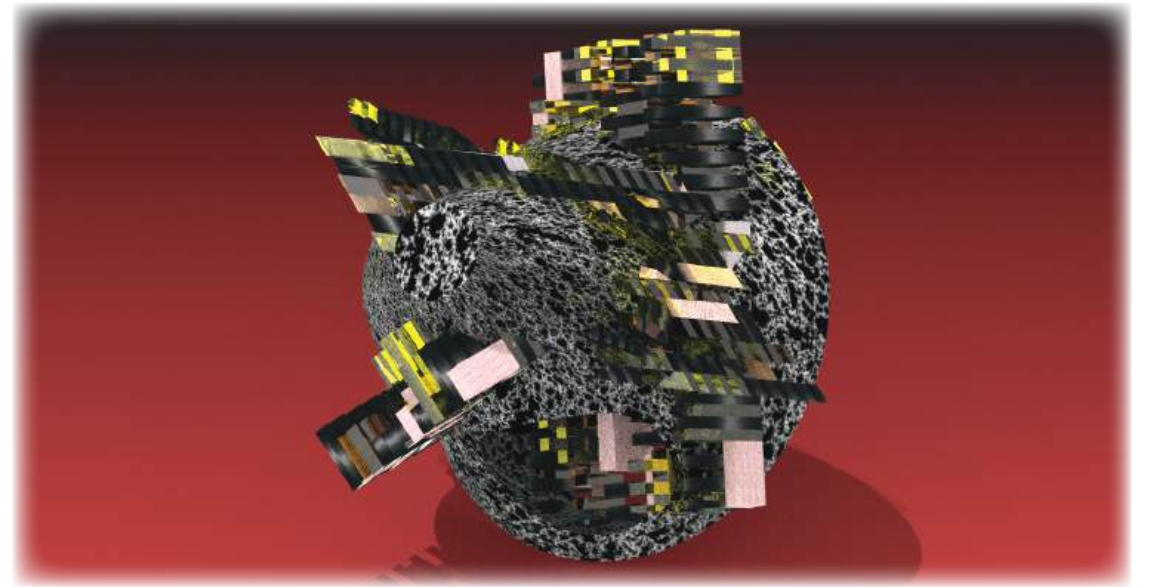
Cross Form, Reflective Corridor



Stretched Form, interior perspective #2



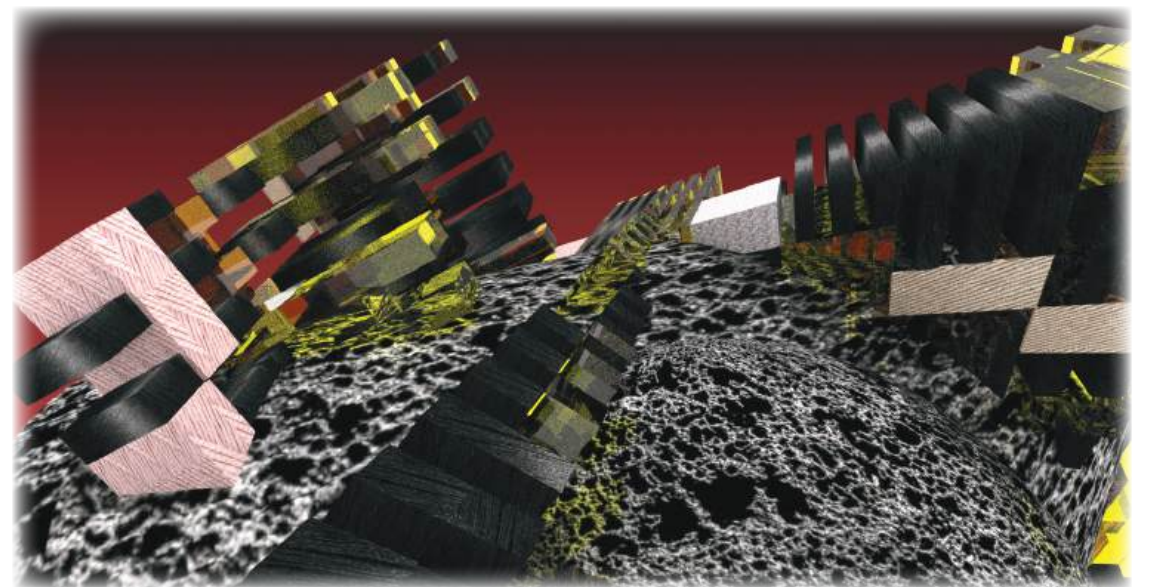
Atomic Cluster: Skewed Form



Shards on the Moon: Fictional Landscape



Atomic Cluster: Skewed Form, interior



Shards on the Moon: Fictional Landscape, closeup on surface

FORMATIONS

STUDIO: JILL LECKNER
FALL 2022

These compositions focus on both basalt rock formations and karst geology. Through the various compositions, I explored how to visualize different forms of landscape. The various ideas I visualized in these compositions are as such as erosion, voids, and carvings. Per instruction, all of these compositions were sculpted using a 80'W x 160'L x 40'H rectangular prism. This is where I first experiment with the software "V-ray"'s rendering and materials.



Gardenia



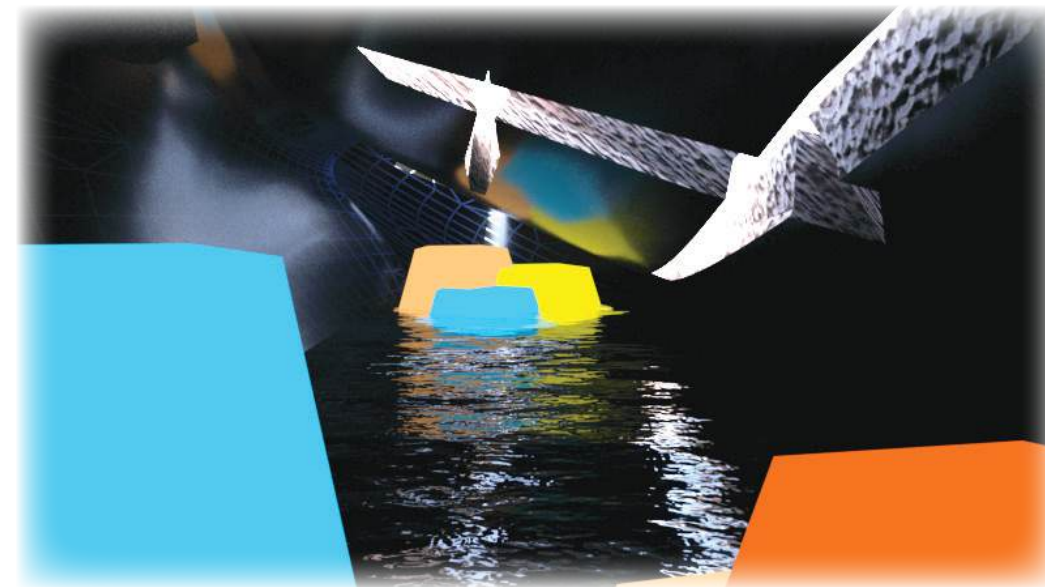
Floating Stone, exterior karst topography



Floating Stone, interior basalt rock formations



LED Basalt Rock Island



LED Basalt Rock Island, interior cave



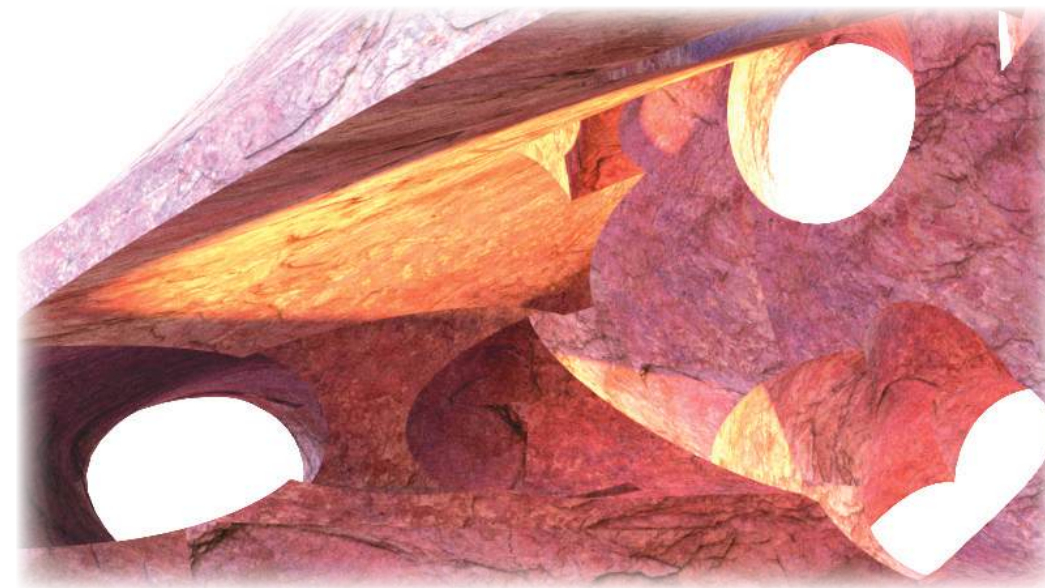
Glass Semi-circle, interior basalt rock formations



Glass Semi-circle, underside basalt rock formations



Mars, exterior karst topography



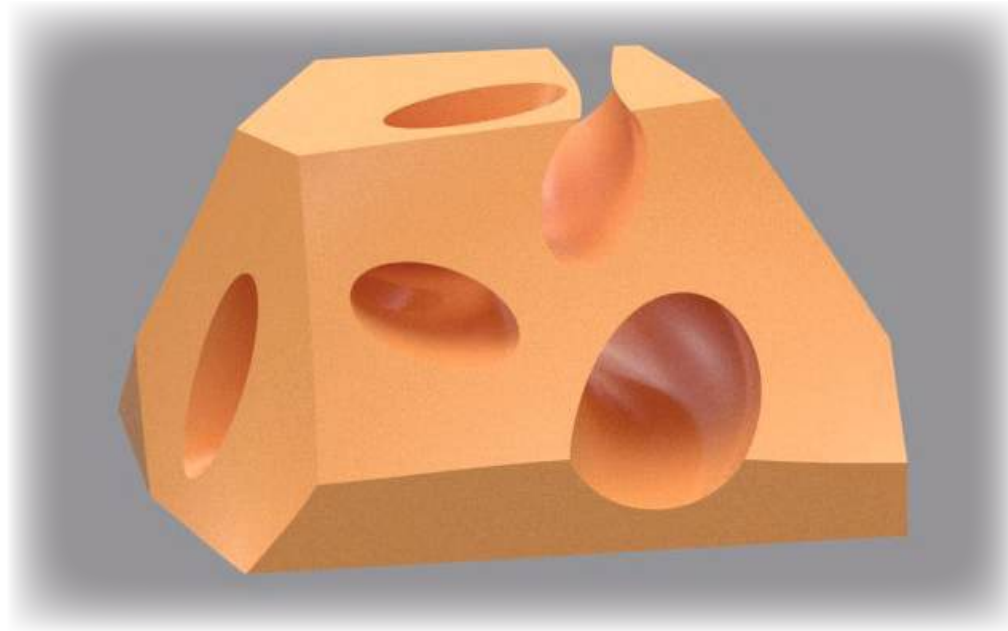
Mars, interior shots

CONTOUR

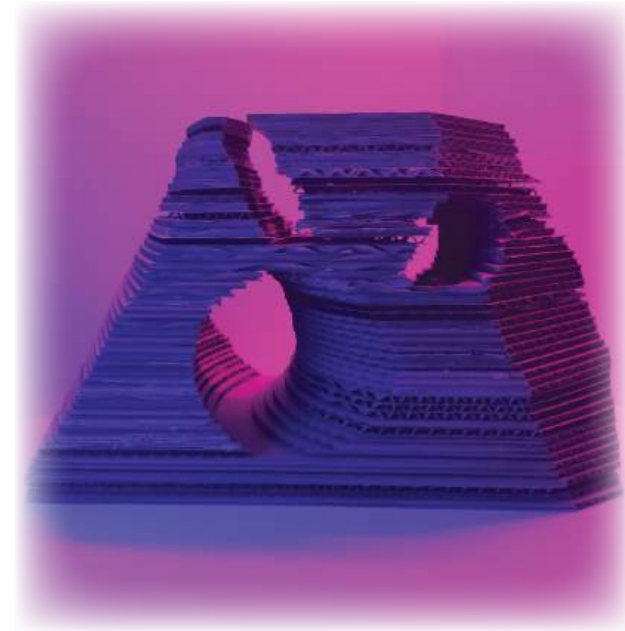
STUDIO: JILL LECKNER
FALL 2022

The theme of the contoured model follows very closely in theme of my previous studies I did with karst topography. The previous composition, "Mars", was an inspiration for the making of this 3d cardboard model. The process first began in Rhino 3D. Once I had a solid model, I exported it to Slicer (For Fusion 360) where the model was then contoured/sliced and layered, making it ready for laser-printing.

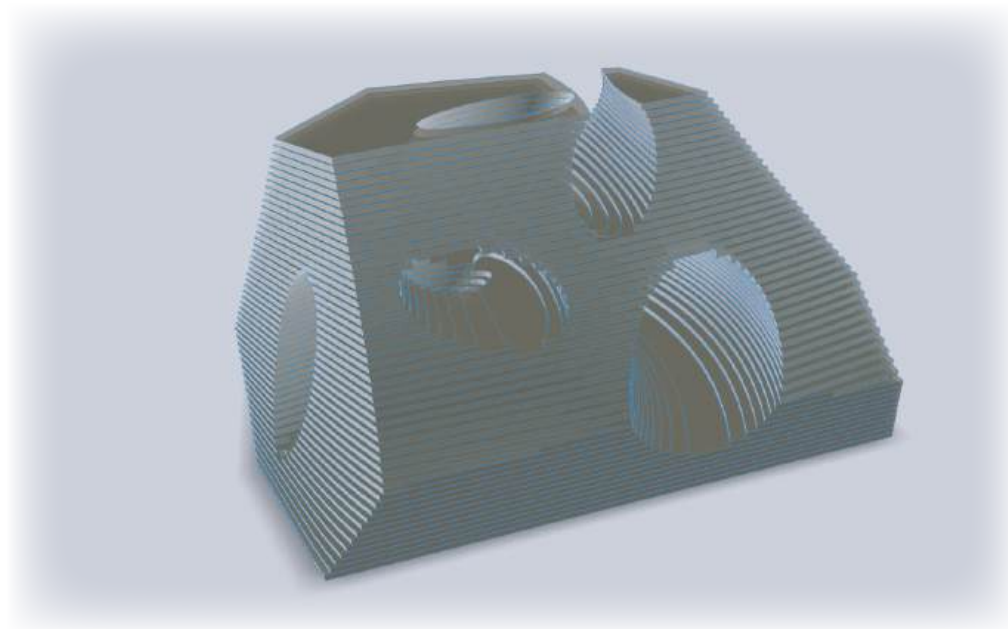




Original composition in Rhino 3D



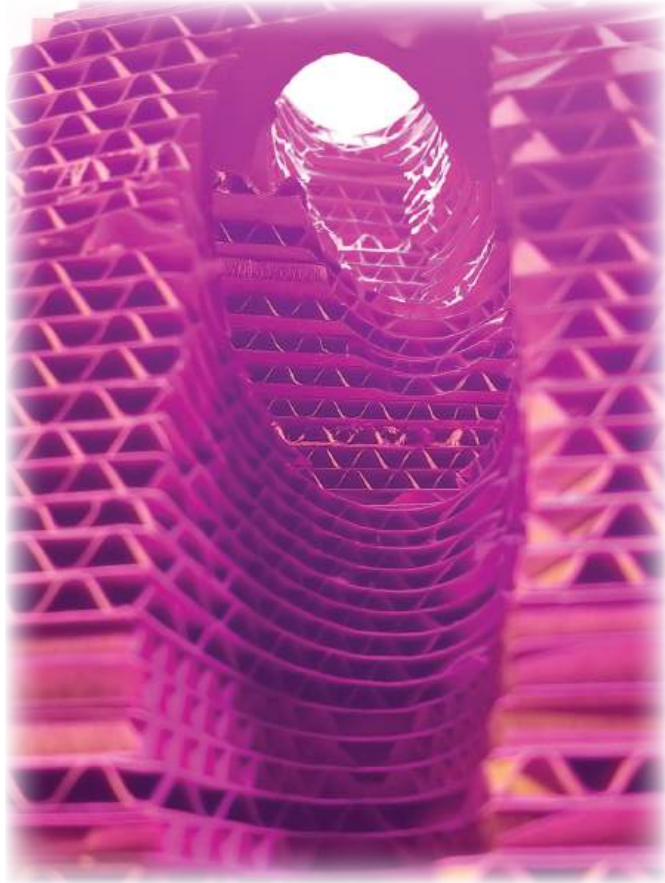
Exterior #2



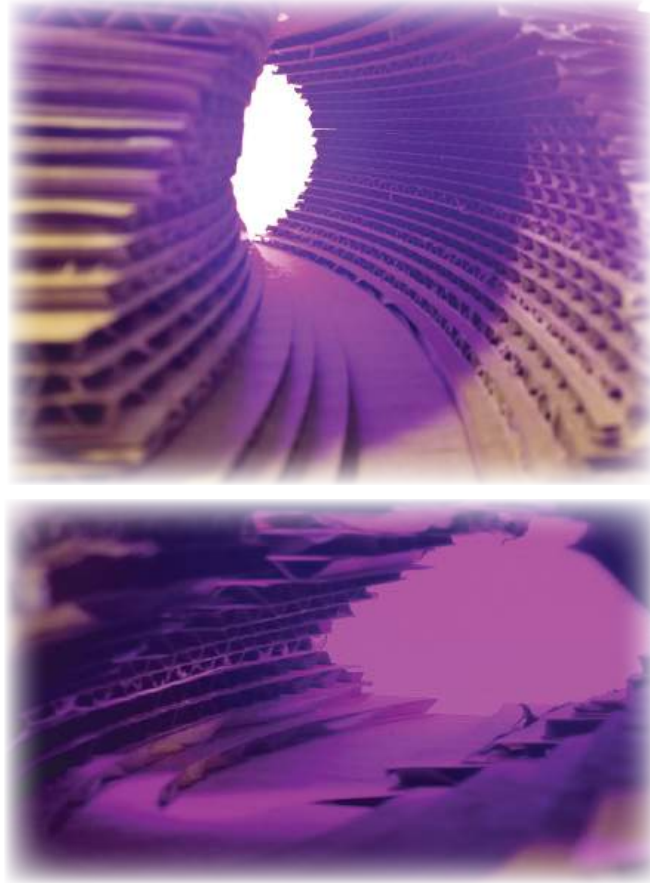
Contoured model in Slicer (for Fusion 360)



Exterior #3, eye-level view perspective



Eye-level perspective

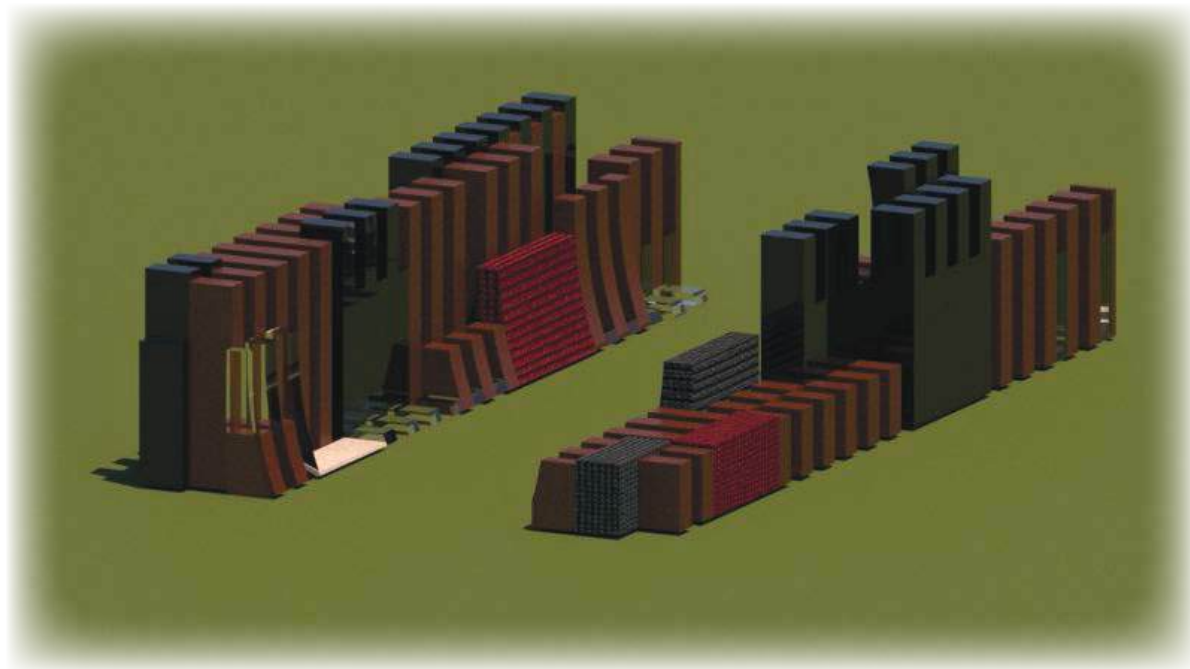


Interiors perspectives #1 and #2

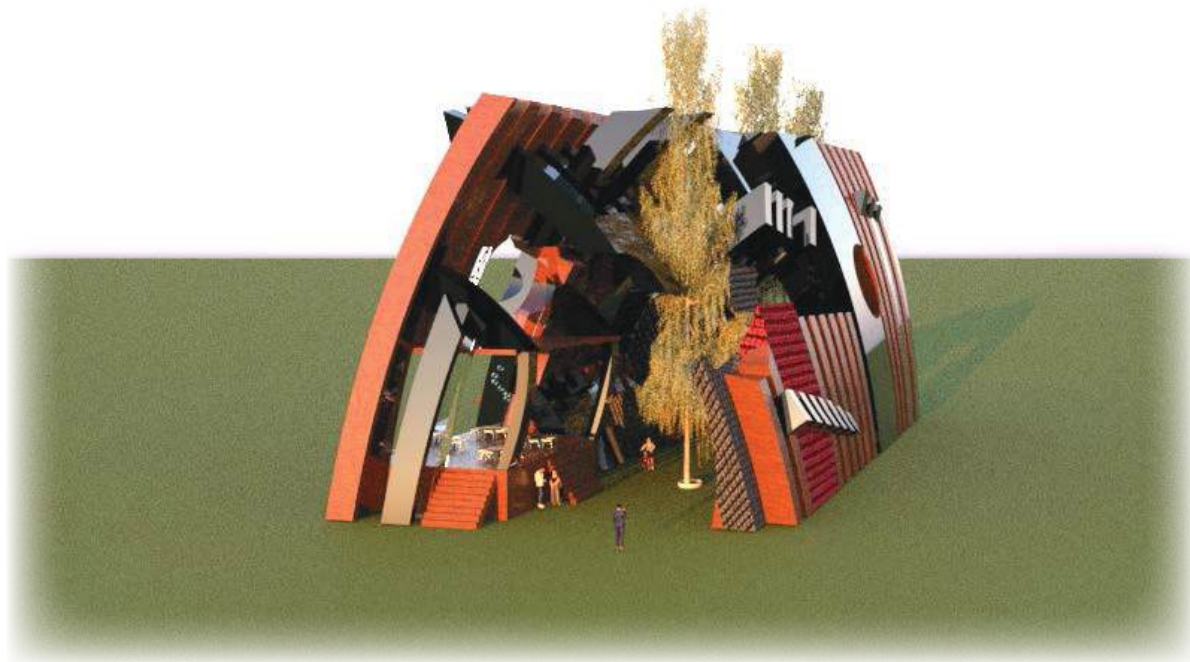
COMMONS

STUDIO: JILL LECKNER
FALL 2022 FINAL

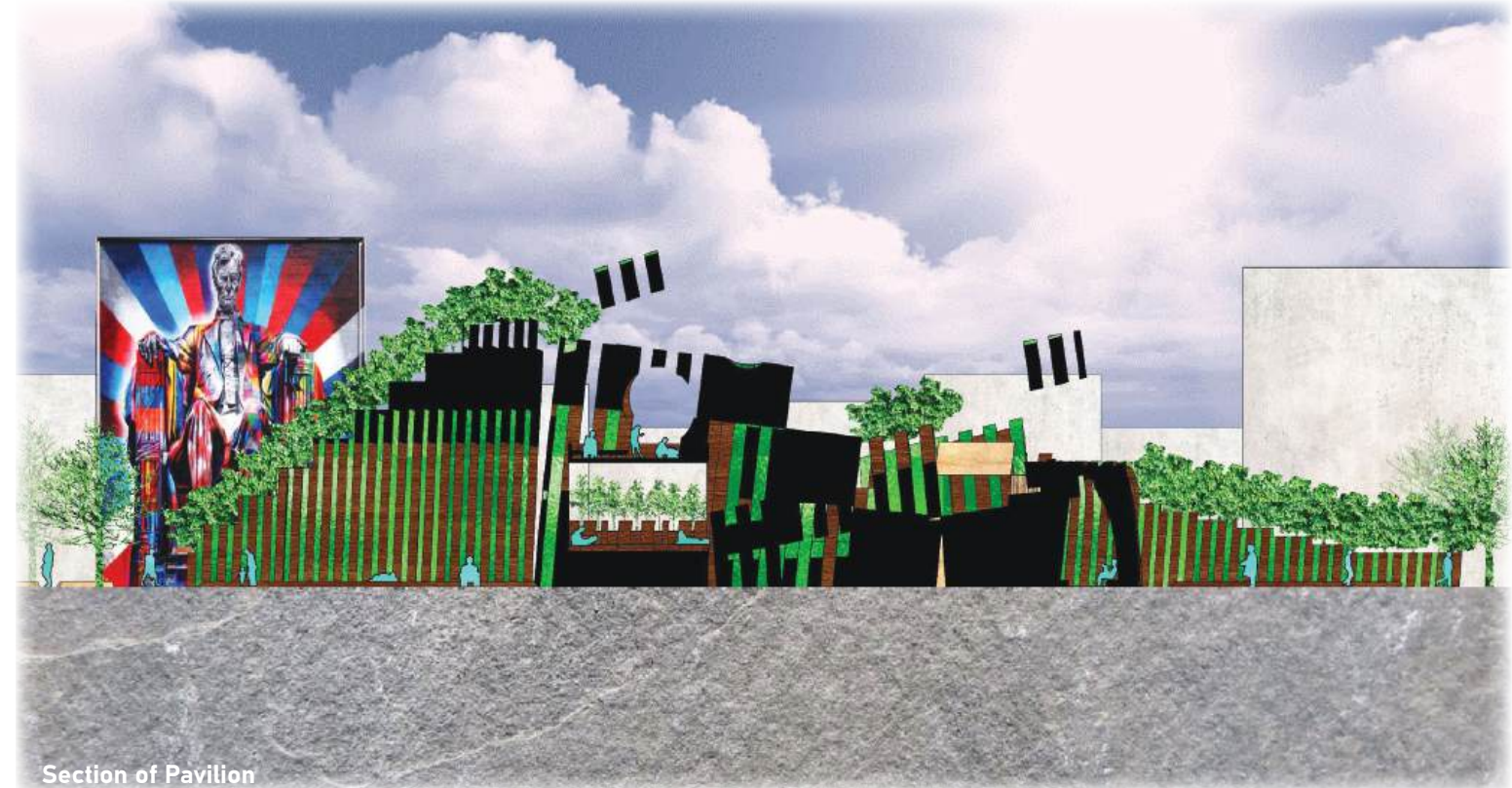
Mahogany Commons is the final project of the fall semester studio, it is a Pavilion based on the Town Branch Commons in Lexington, Kentucky. The structure is meant to replace the parking lot in front of the Abraham Lincoln Mural and Lextran Bus Station. The composition of the Pavilion centers its self around the "Bauhaus textiles" by the artist Anni Albers. The Pavilion itself greatly takes inspiration from the McConnell Springs Park also located in Lexington, Kentucky due to its nature. In the nature aspect, I wanted the concept to tie into eco-friendliness and bring the forest to the city. Hence my use of materials and textures such as mahogany wood, green glass, limestone which is incorporated from the Town Branch Commons, and bamboo. I vision that people would experience calmness and peace while interacting with the pavilion.



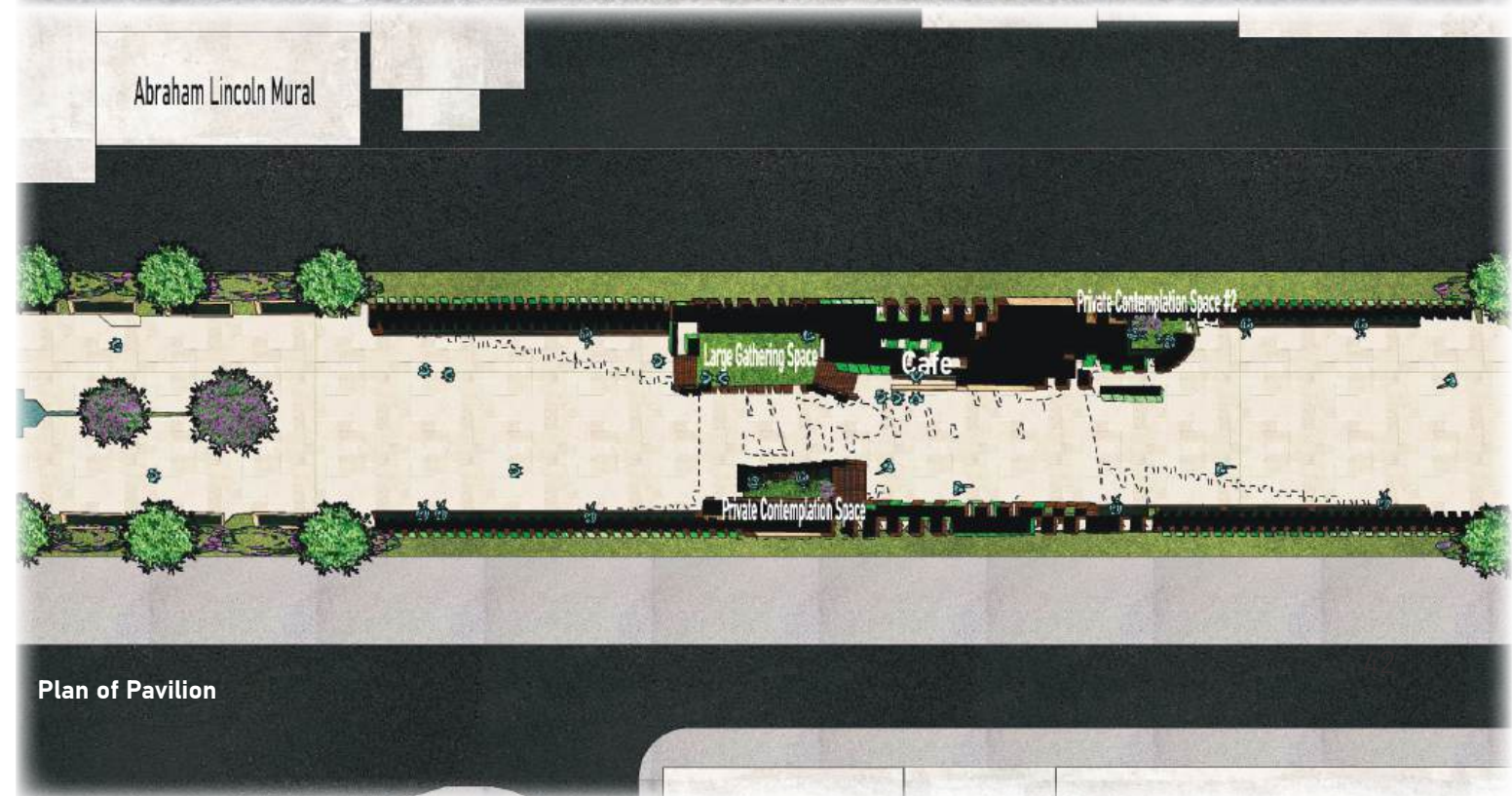
Early Iteration for Pavilion, before the shape is bent inwards.



41 Early Iteration for Pavilion #2



Section of Pavilion



Plan of Pavilion



Isometric NW Perspective, shows relation of Abraham Lincoln Mural to second floor.



Main Entrance



43

Exterior closeup, closer look at the second floor.



Second Entrance

44



Private Contemplation Space #1, a slightly darker and quiet natural space to decompress in.



45

Private Contemplation Space #2



Large Gathering Space, common area with natural benches integrated into structure.



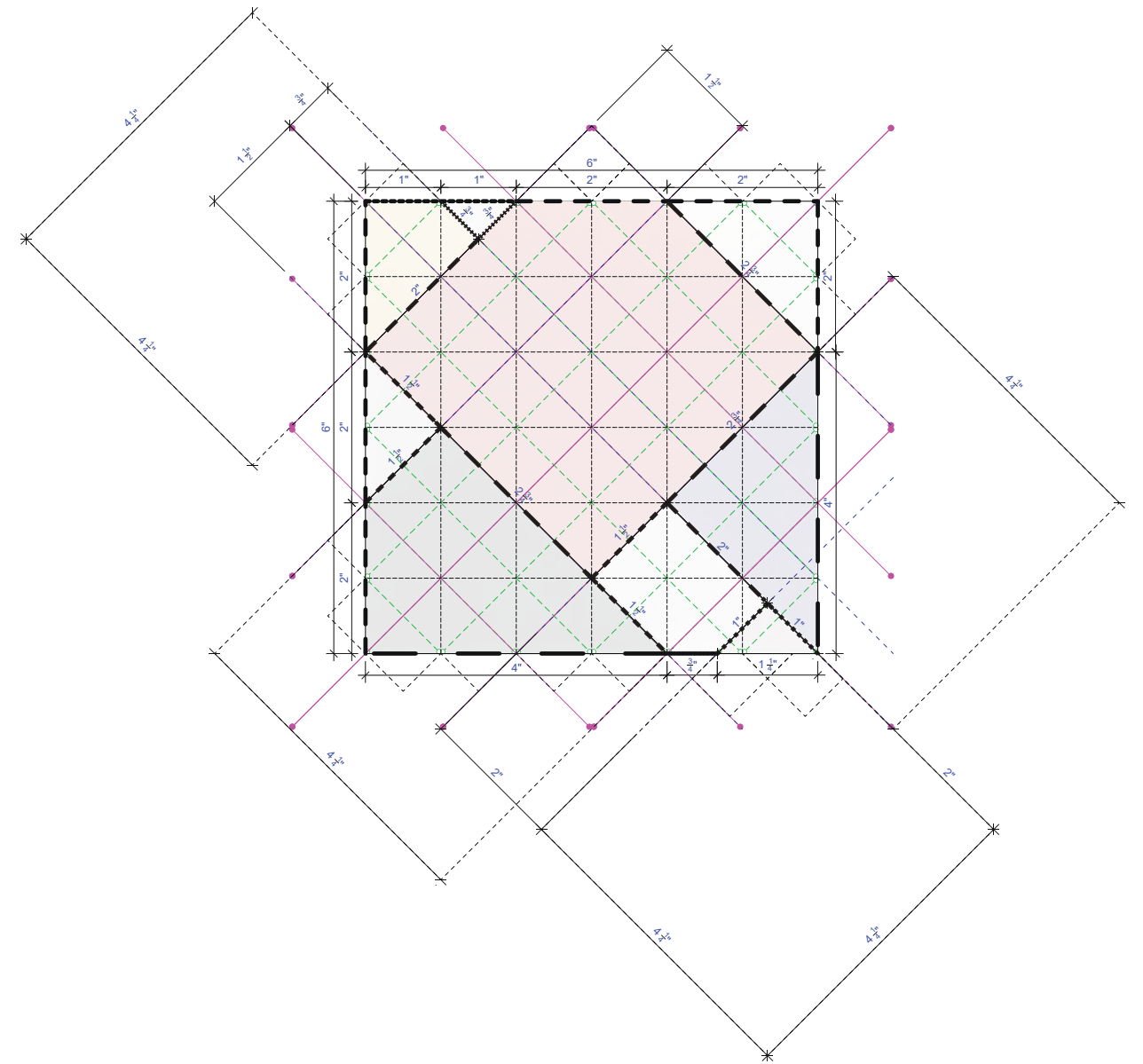
46

Mahogany Cafe, a natural cafe where passing visitors can refresh themselves. It uses materials such as limestone and bamboo in its composition.

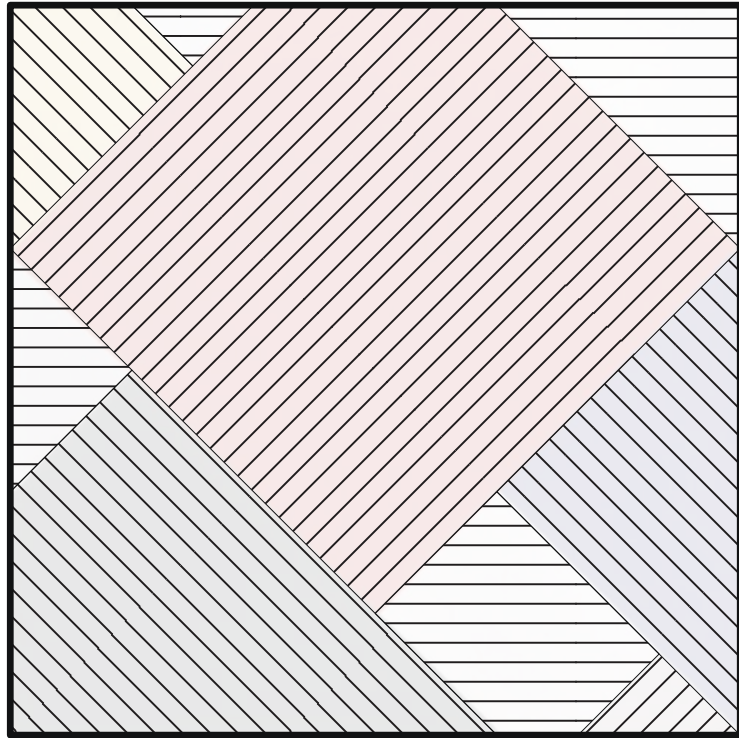
SURVEY ANALYSIS

ARC 101 BY: LEEN KATRIB
SPRING 2023

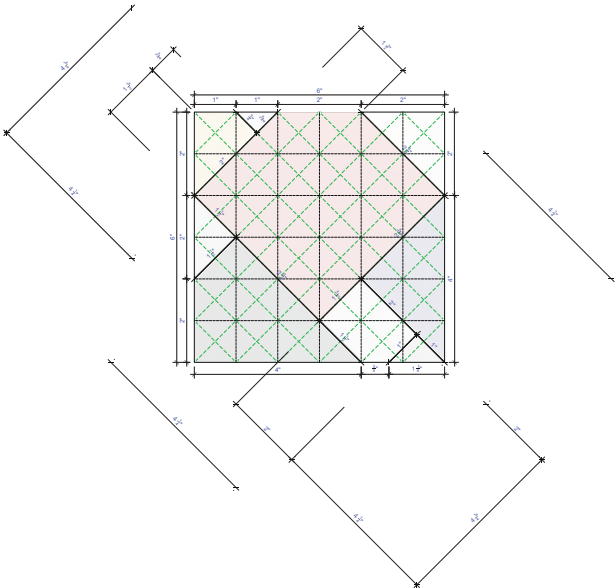
The goal of this Survey Analysis exercise was to survey (examine, trace, and note dimensional relationships) and analyze hidden geometric logics behind the flattened two-dimensional image from Theo van Doesburg.



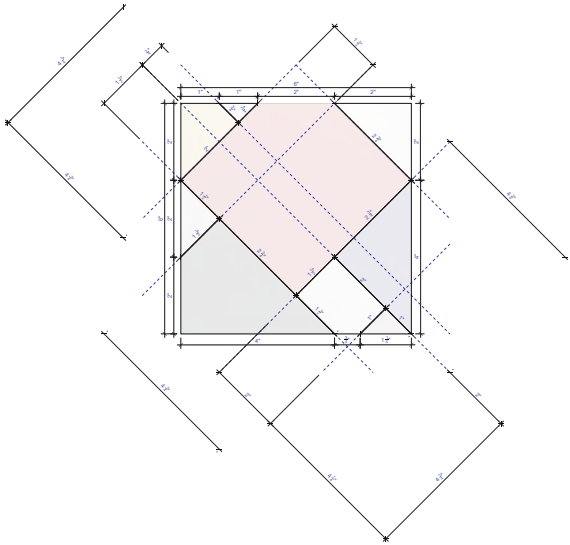
Final Composite Image



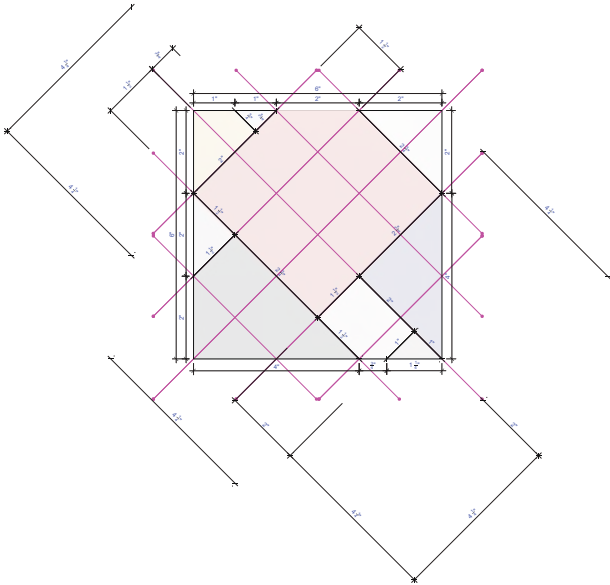
Beginning by splitting up the image by colors and hatching.



Geometric Logics #1



Geometric Logics #2

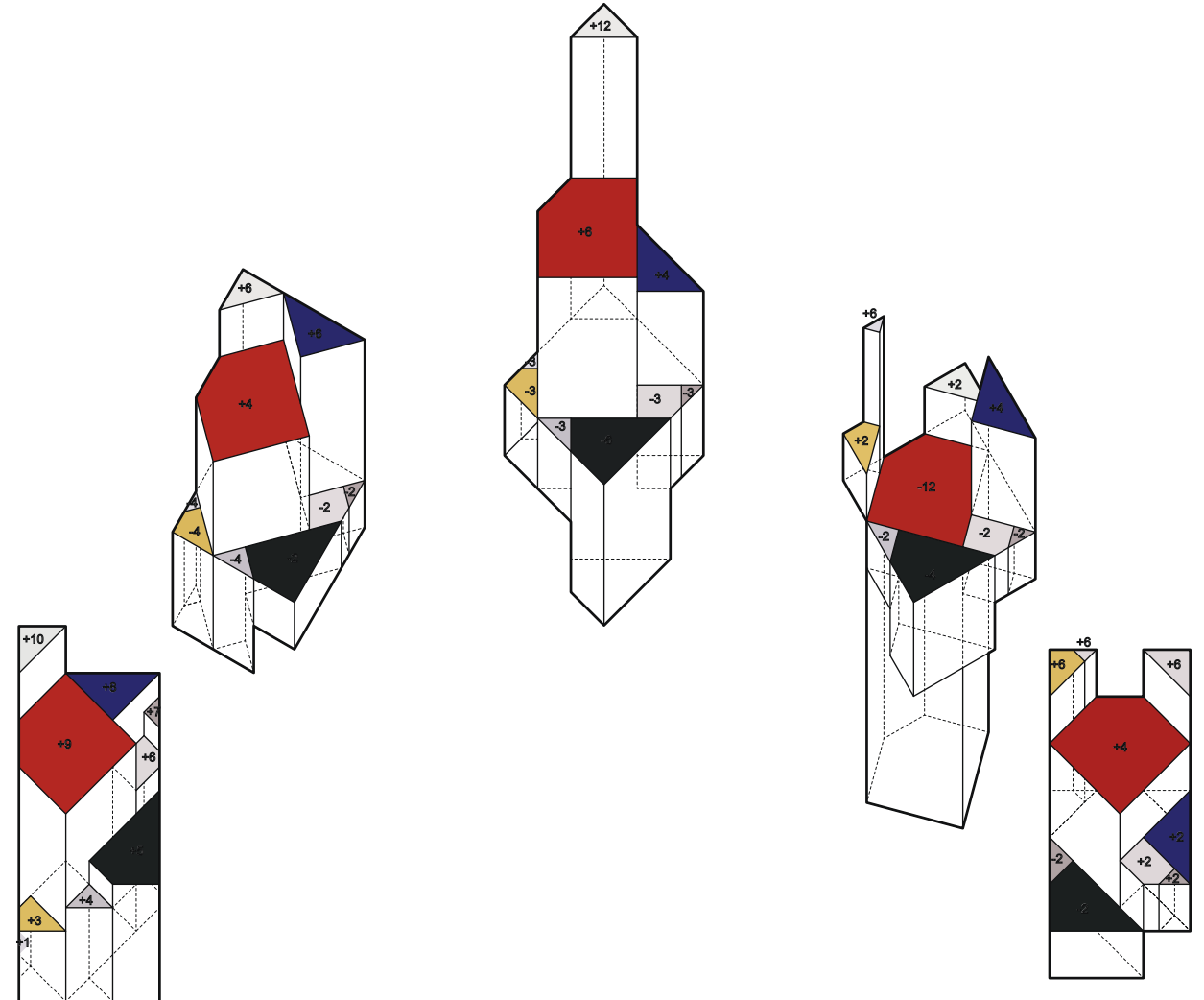


Geometric Logics #3

AXONOMETRICS

ARC 101 BY: LEEN KATRIB
SPRING 2023

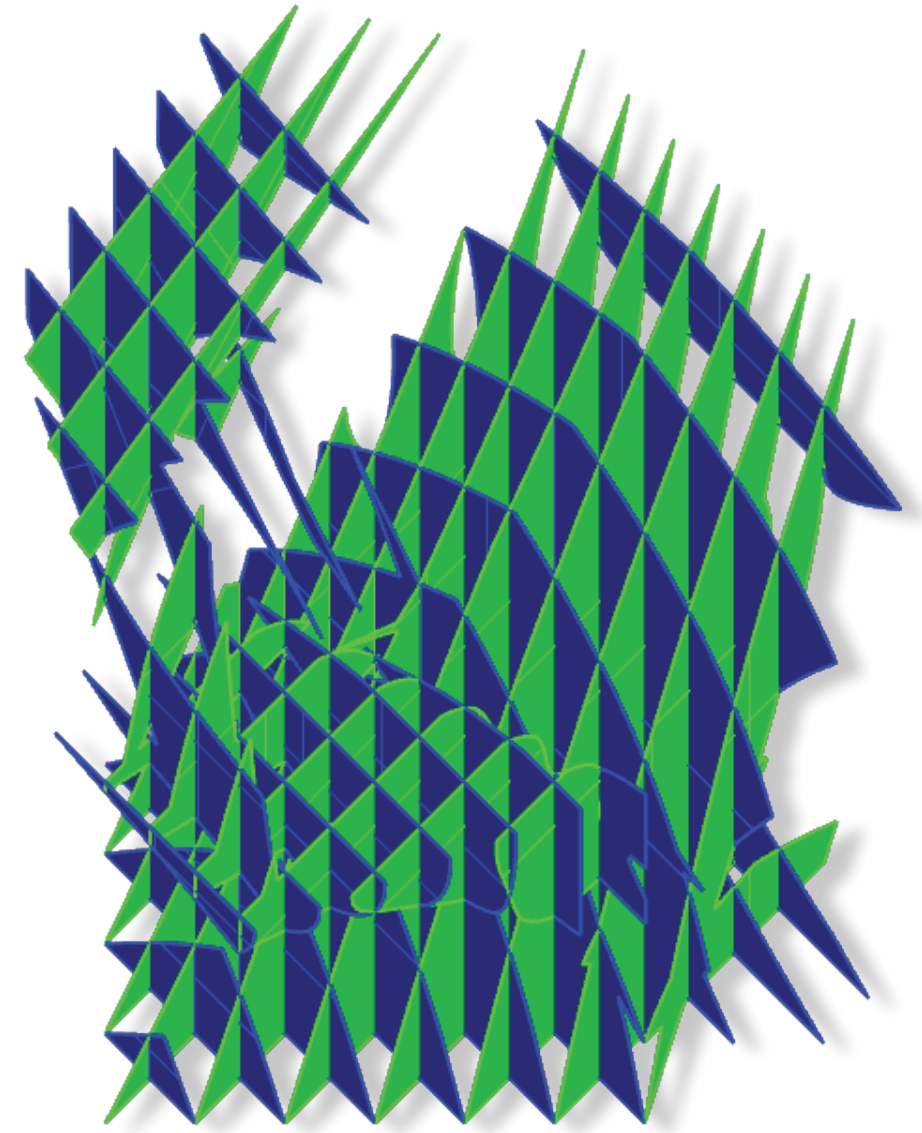
A step up from Survey Analysis and taking Theo van Doesburg's Counter-Composition V into a rotating sequence of extruded military projections.



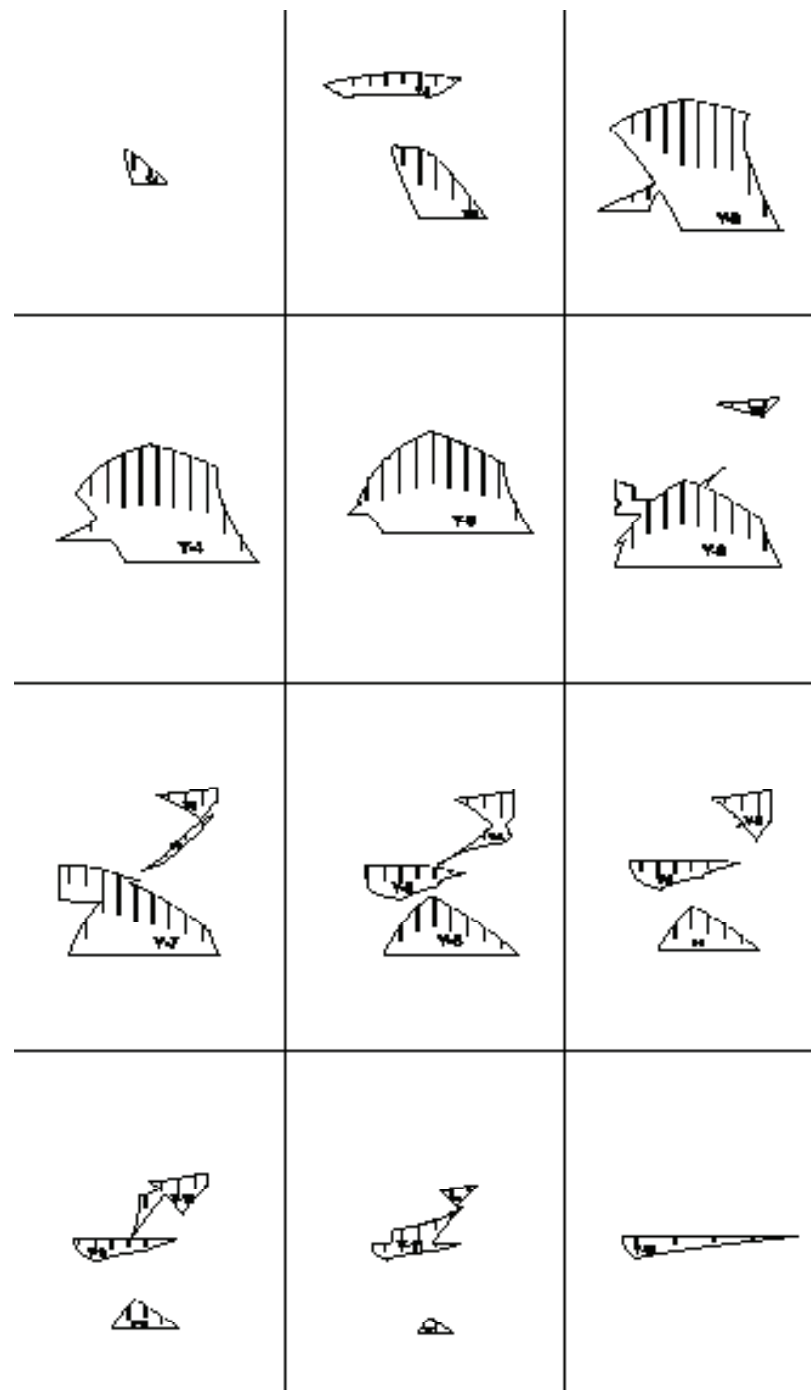
WAFFLECUBE

ARC 101 BY: LEEN KATRIB
SPRING 2023

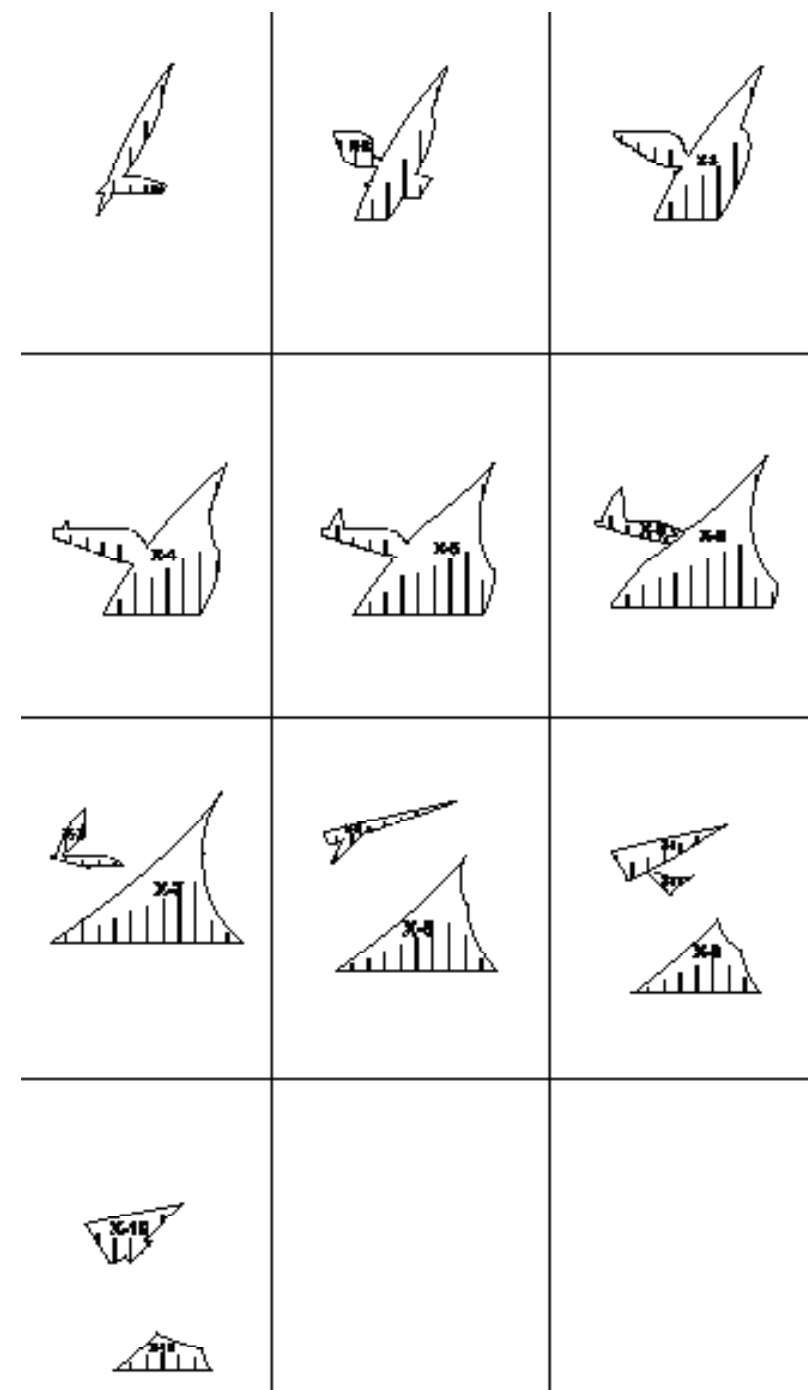
In this exercise, we worked in Rhino to produce a waffle-cube structure introducing parts that go in the Y/X Direction, these are then known as "Y Stacks" and "X Stacks". These stacks come together and create this waffle-like form.



Military Waffle Oblique View



Drawings of Y-Stacks

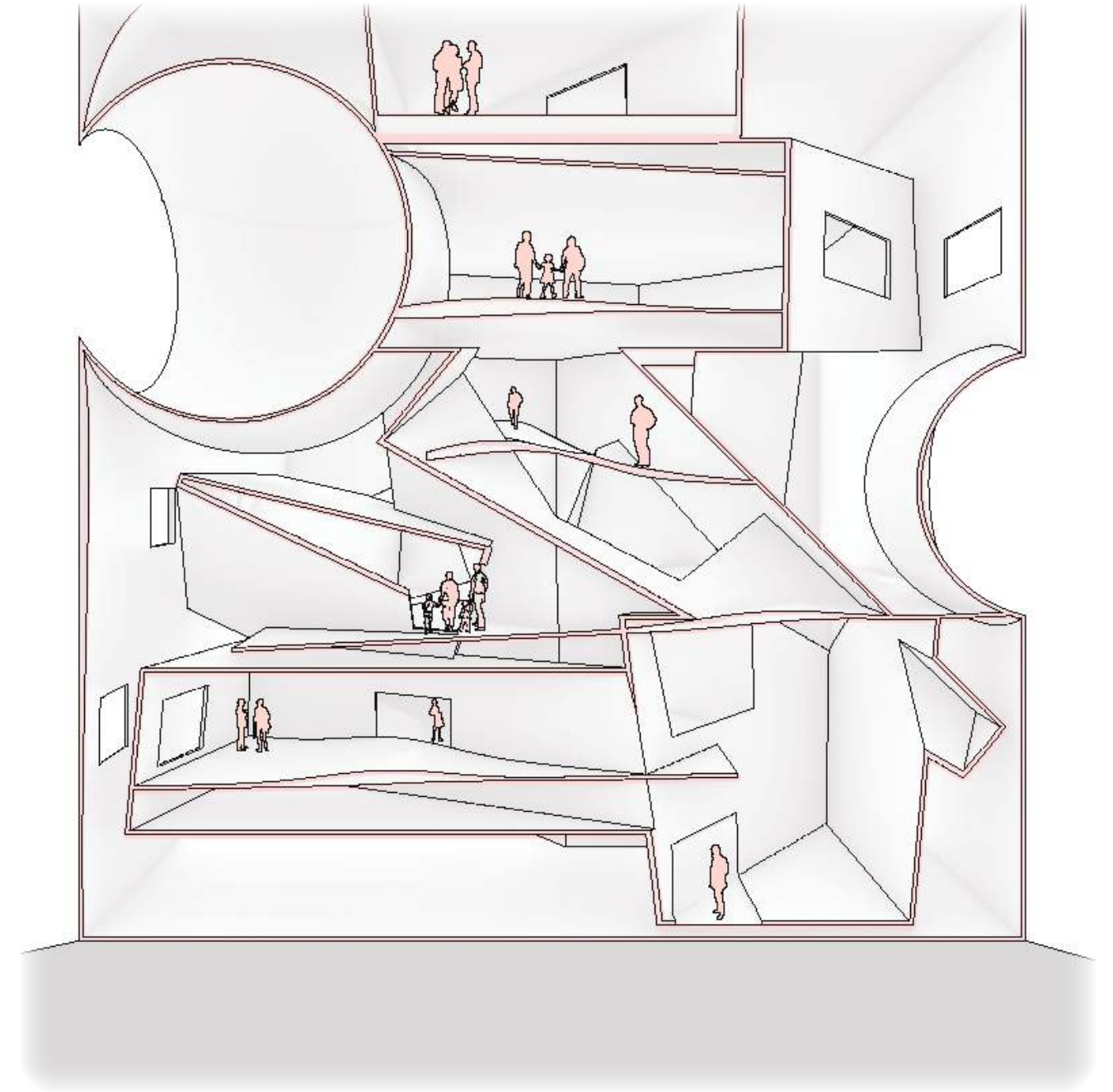


Drawings of X-Stacks

SECPERSPEC

ARC 101 BY: LEEN KATRIB
SPRING 2023

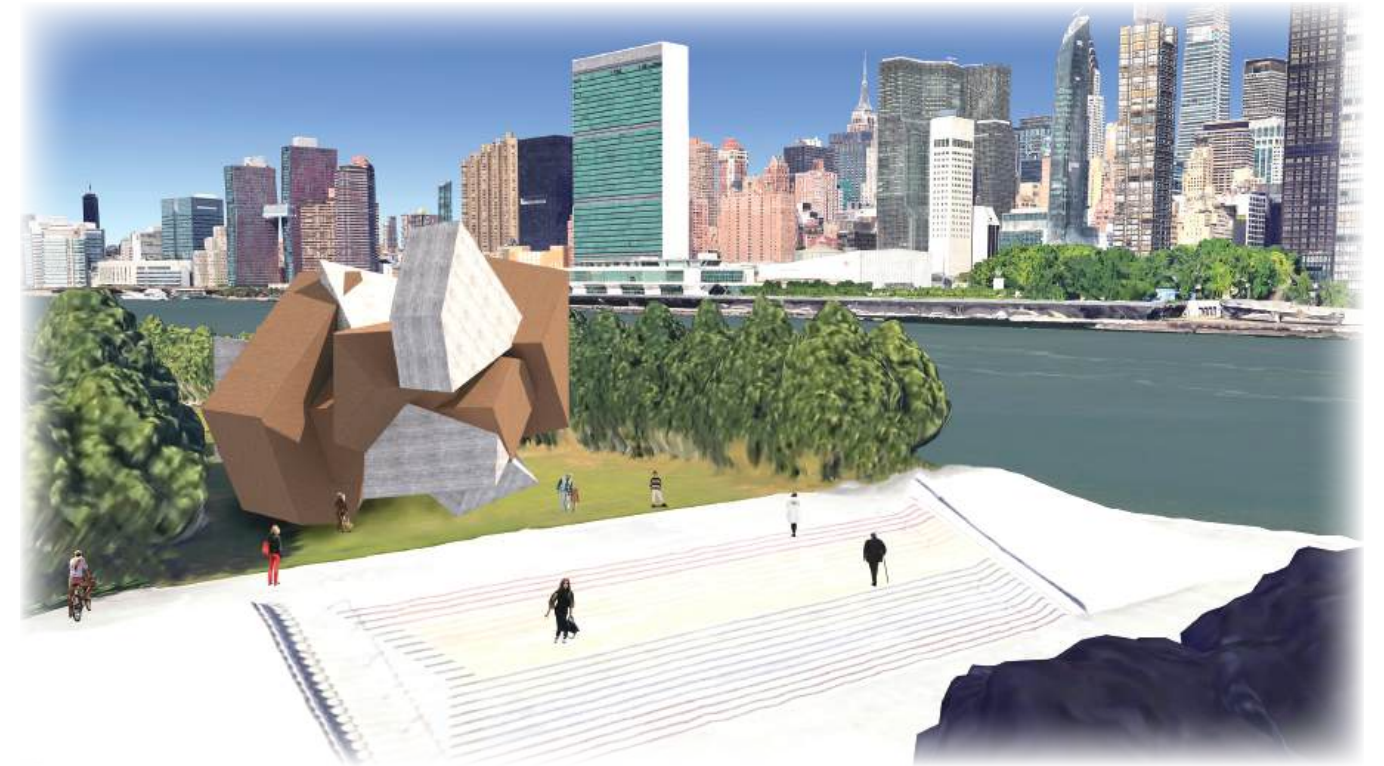
In this exercise, we designed through the section, making this section perspective view. There are an order of sectional operations used in this exercise such as: stack, shear, incline, nest, and shape.



IN-SITU'ED

ARC 101 BY: LEEN KATRIB
SPRING 2023

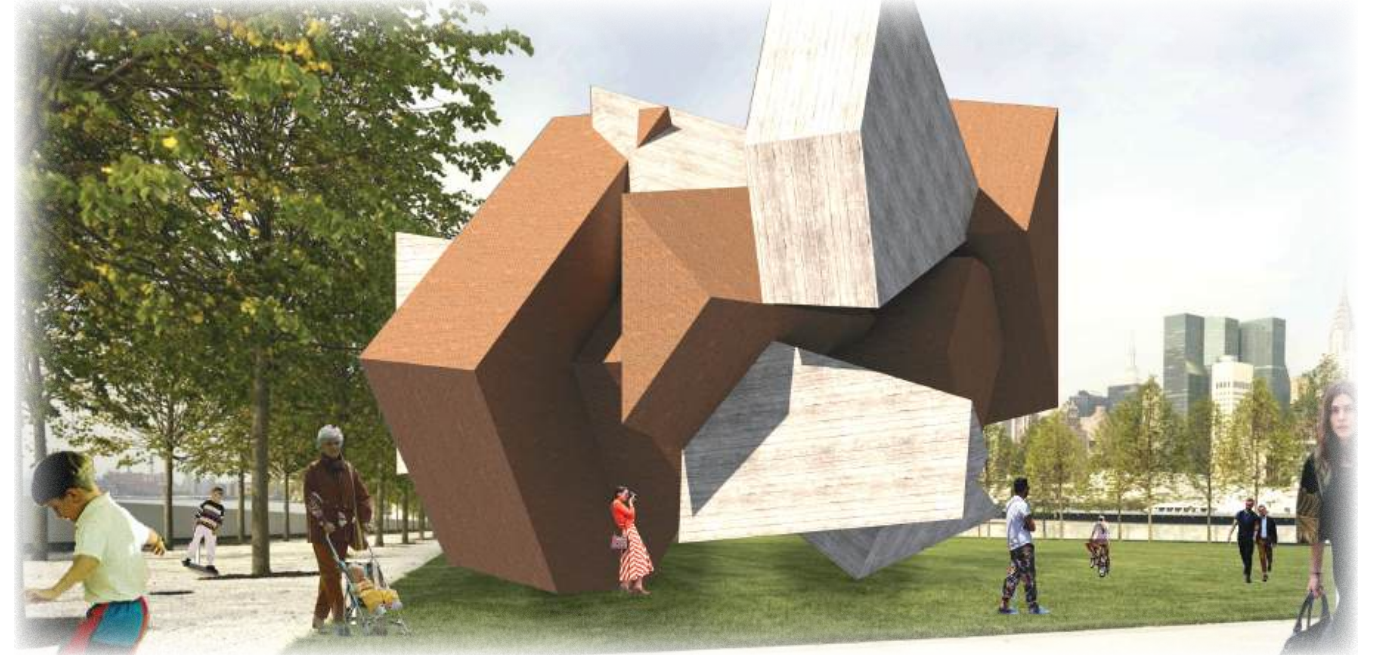
In this exercise, we situate our pavilions using Louis Kahn's Four Freedoms Park on Roosevelt Island in New York City. Placing these pavilions on a real site, we begin to explore the world of rendering—specifically hyper-realistic, in-situation rendering.



Google Earth Perspective



Aerial View Perspective

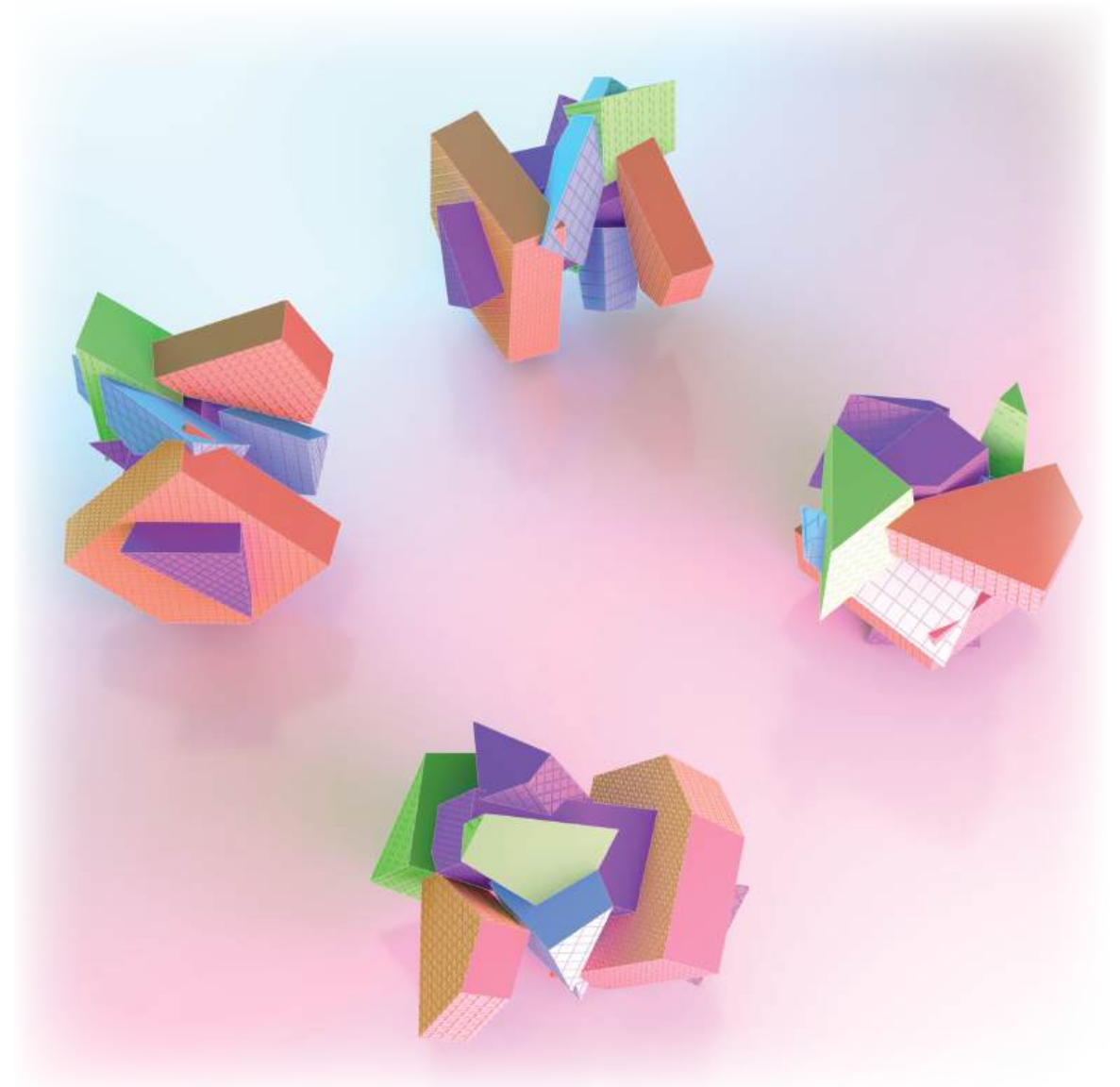


Ground-level Perspective

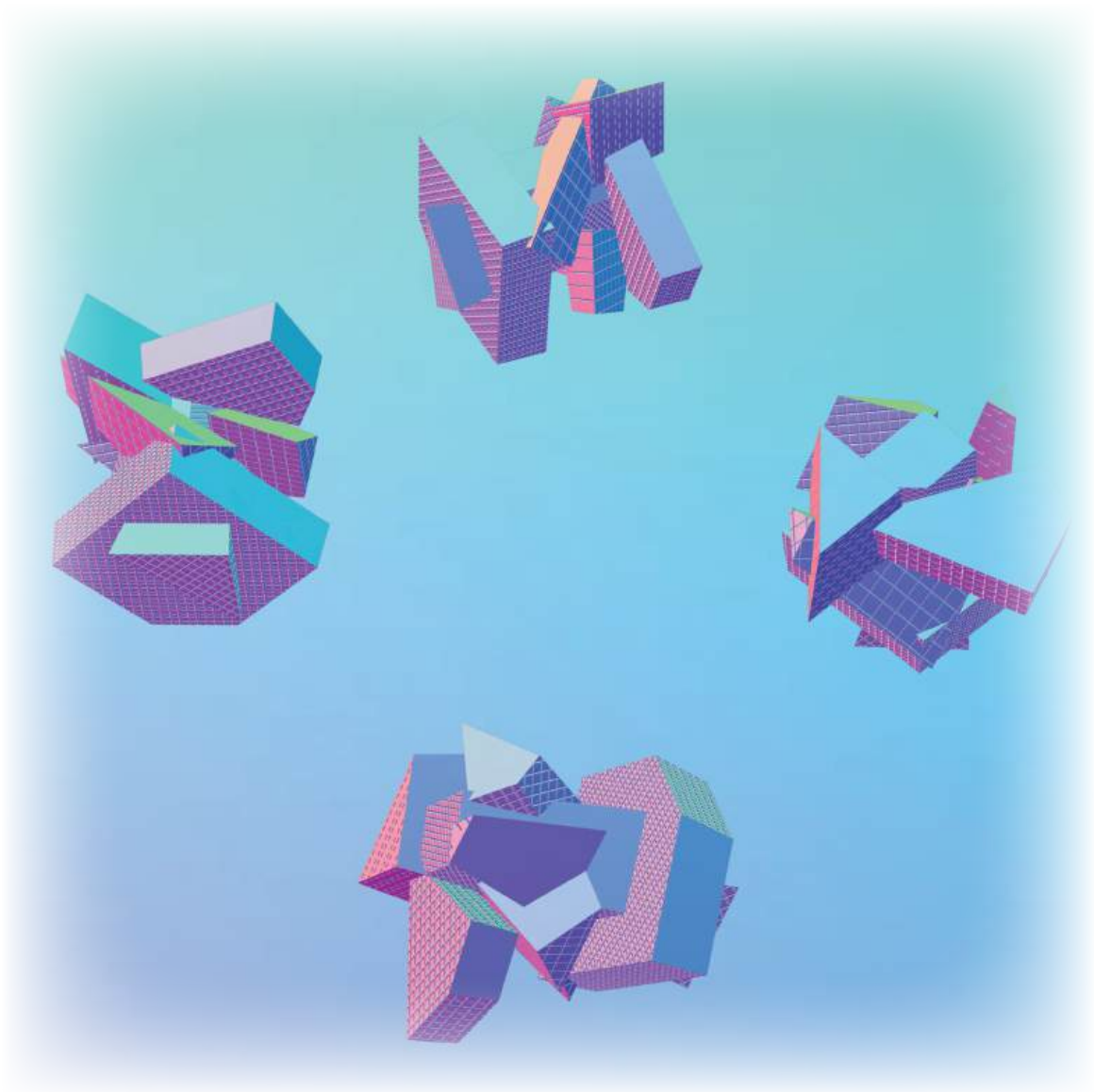
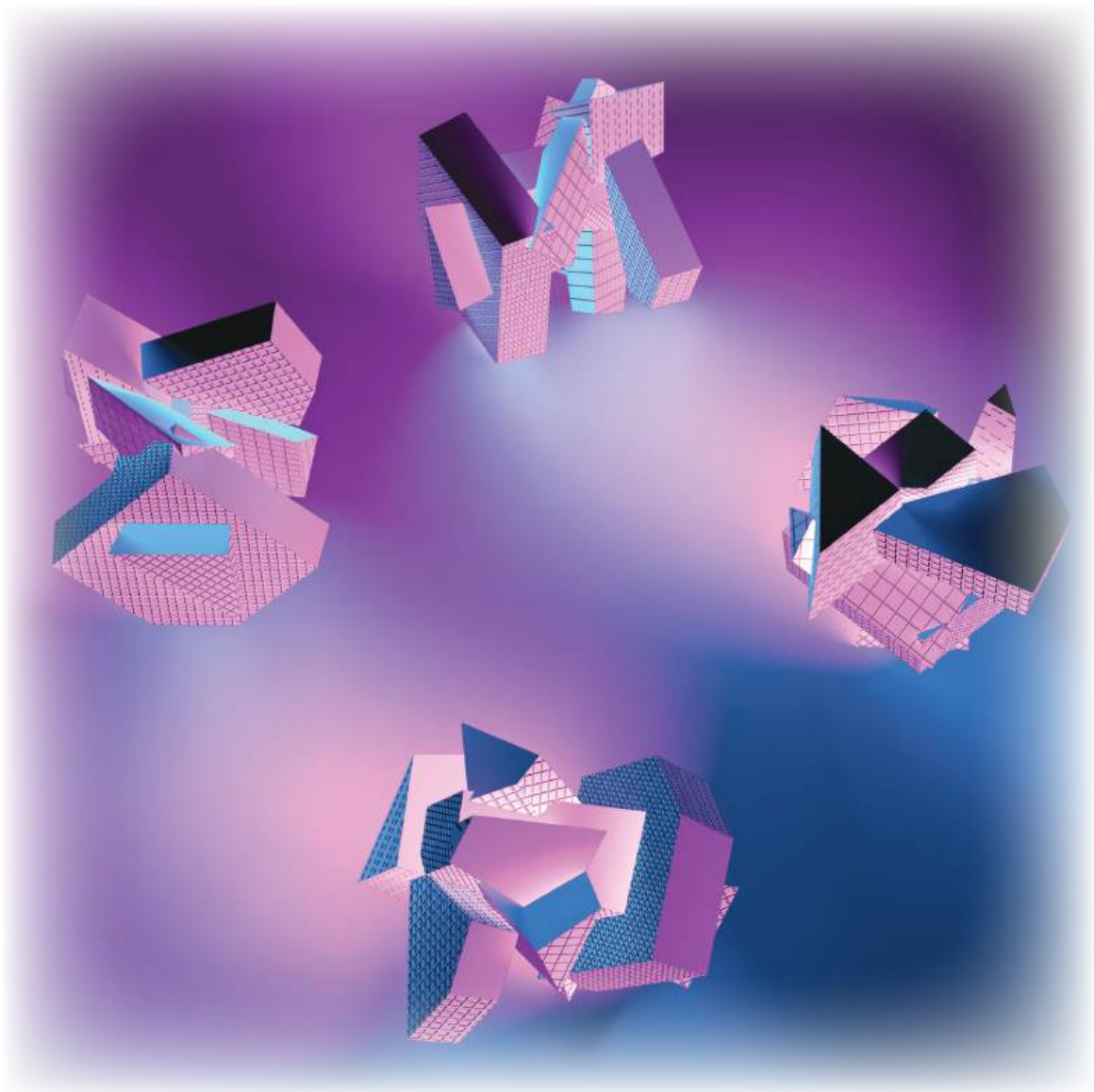
EX-SITU'ED

ARC 101 BY: LEEN KATRIB
SPRING 2023

Looking at the work of MALL / Jennifer Bonner, we then explore the world of bump maps to create faux textures, as well as staged lighting to create an ephemeral environment.



Faux-Finishes

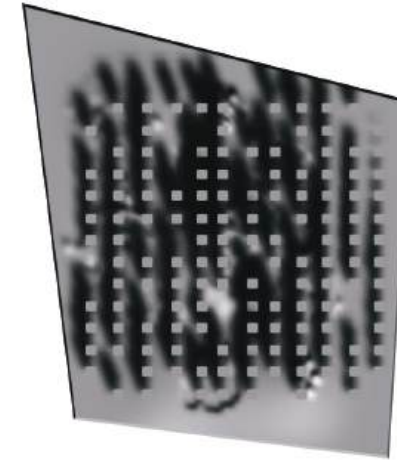


SHADOWS

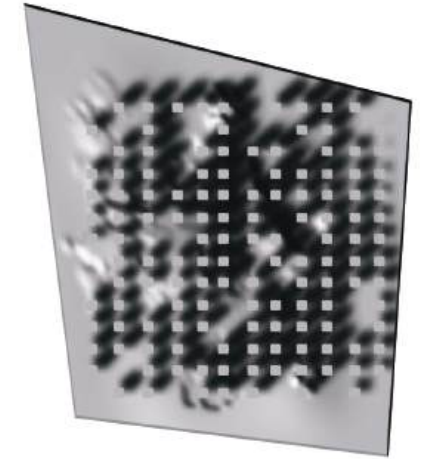
Mini-Project Diagrams

STUDIO: LEEN KATRIB
SPRING 2023

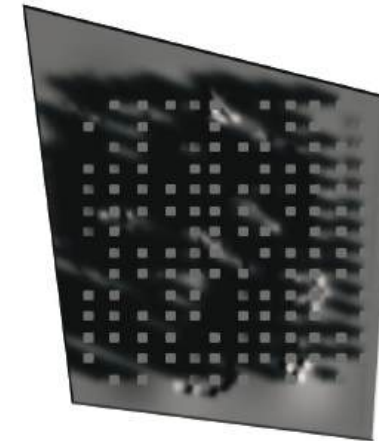
For the first of the semester, interest was taken in the form of Peter Eisenman's Holocaust Memorial and the way that the blocks undulate over the surface, also taking in the factor of how those blocks cast shadows. There is a 3 month interval (March-December) as well as a 3 hour interval (9am-6pm) showing how these shadows evolve over time.



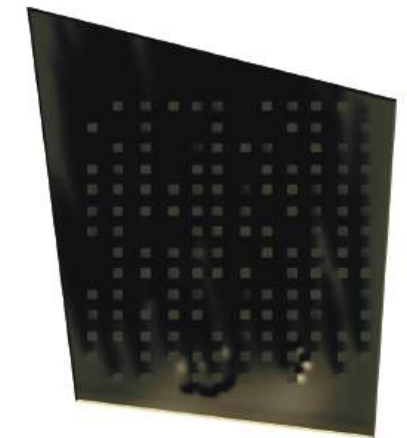
3-21-2023 12PM



6-21-2023 3PM



9-21-2023 9AM



12-21-2023 12PM

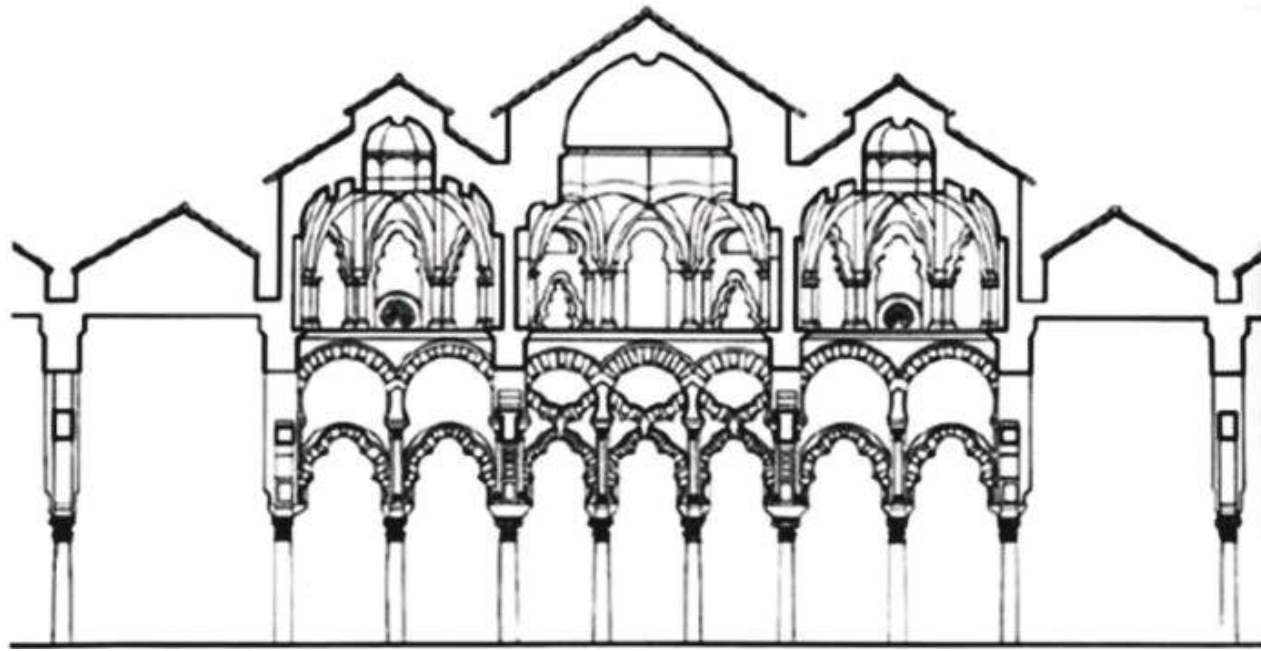
TRANSFORMATIONS

STUDIO: LEEN KATRIB
SPRING 2023

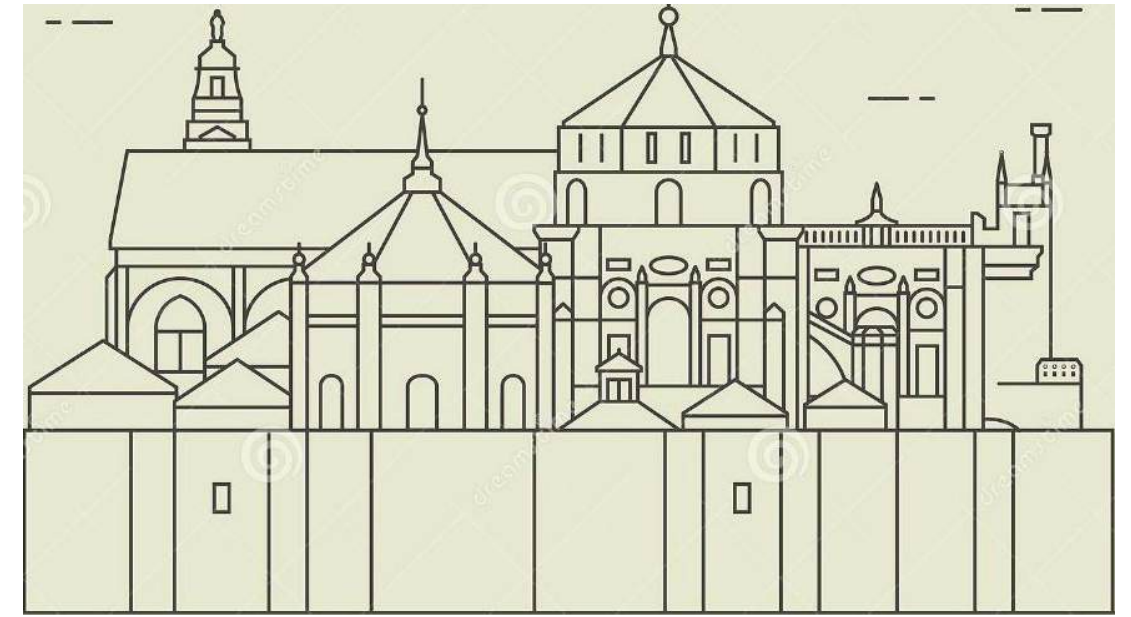
This exercise focused on transforming the idea of undulation and the blocks from the Holocaust Memorial into the ideas of replacing the blocks with the columns from the Cordoba Mosque and undulating those along a surface, and drawing out the Cordoba Mosque and having parts of it sectioned off, undulating along a surface.



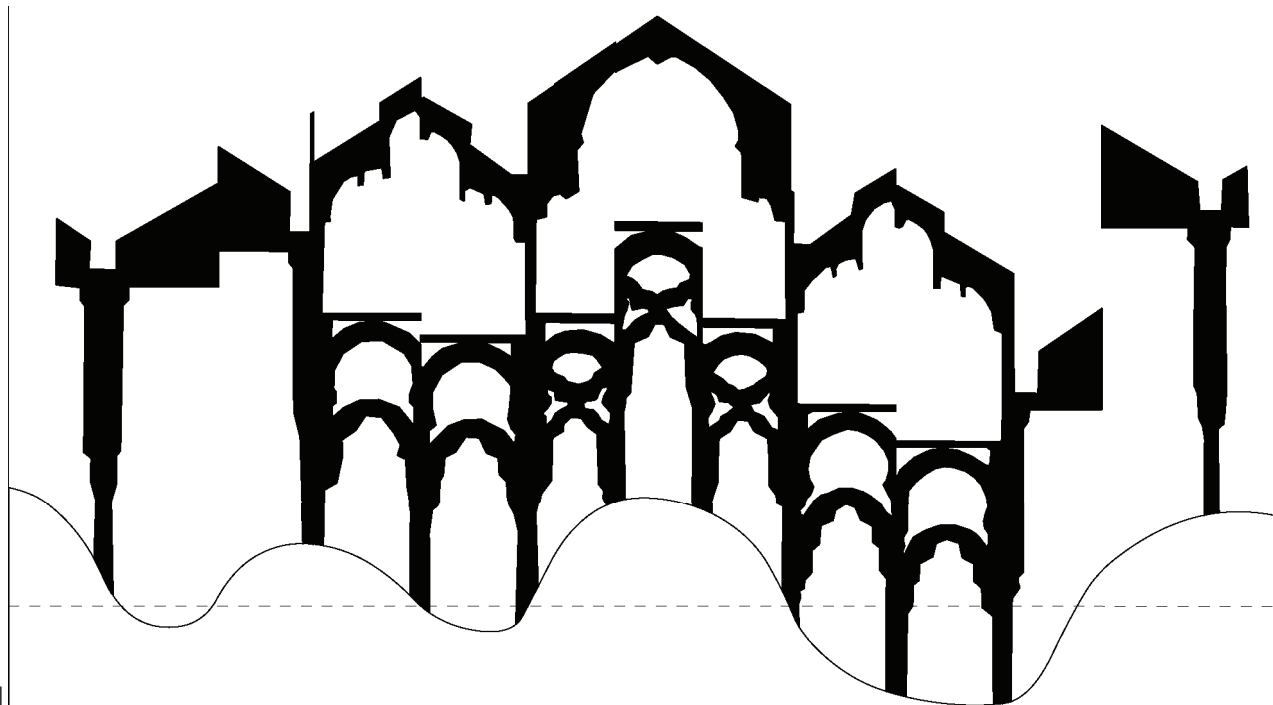
Undulating Columns



Reference Image of Cordoba Mosque Section



Reference Image of Cordoba Mosque Elevation



Re-interpreted Undulated Section Drawing



Re-interpreted Undulated Section Drawing

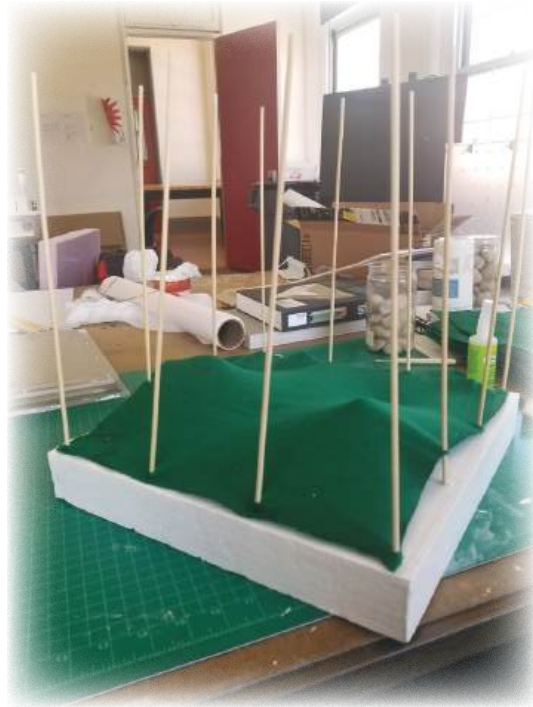
UNDULATIONS

“FAIRGROUNDS” Interlude

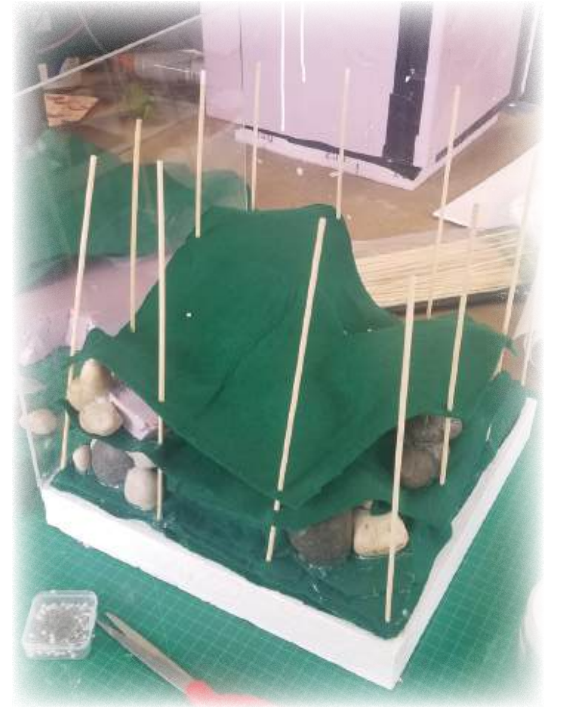
STUDIO: LEEN KATRIB
SPRING 2023 MIDTERM

Taking the idea of surface undulation from the Holocaust Memorial, that is put into full perspective in a full physical model showing the forces that undulate the surface. Materials were used such as felt taking place as the surface, and the rocks and insulation board as forces undulating the felt.





Process Images



Process Images #2

Exterior Grounds Perspective

For this counterproductive pavilion, the form of this pavilion was derived from the Holocaust Memorial precedent, taking the idea of an undulating surfaces and using it as the main theme of the project. In the "Undulations" project, the idea of an undulating surface was fully visualized in a physical model form. This physical model took the idea of forms like rocks and insulation board undulating a surface. The same idea applies in the final project; however, the programs are used as the factor undulating the surfaces. A surface condition was brought back from the physical model where the surfaces start to dip from the program's pressure. Conceptually for the bathroom, great inspiration was taken from the Mabel Wilson and Joel Sanders lecture of their gender, disability, religious, etc. Inclusive bathrooms. This bathroom would include the single-use bathrooms that are gender and disability inclusive, a prayer space, and lactation room.





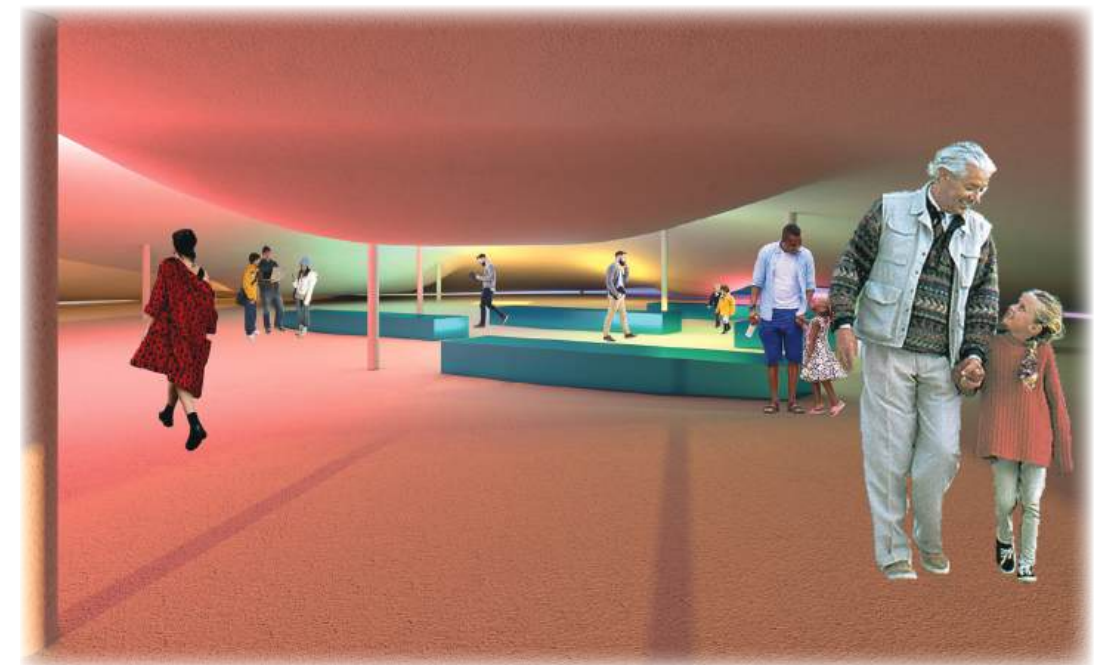
All-Inclusive Bathrooms



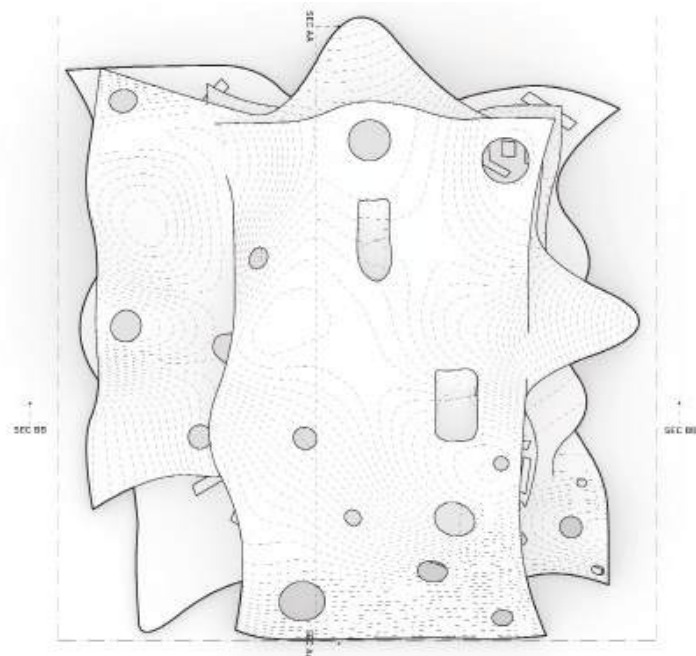
Alt-Assembly Area



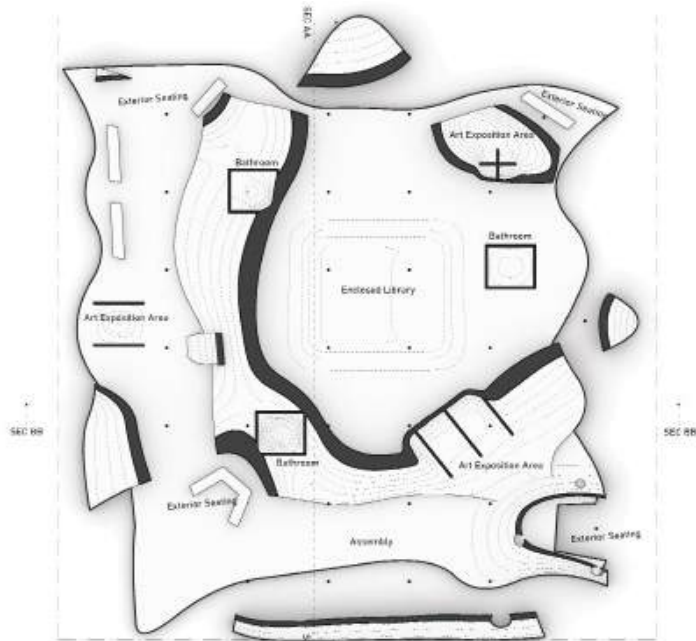
Exterior Seating Area



Enclosed Library



Roof Plan Drawing



Cut-Plan Drawing

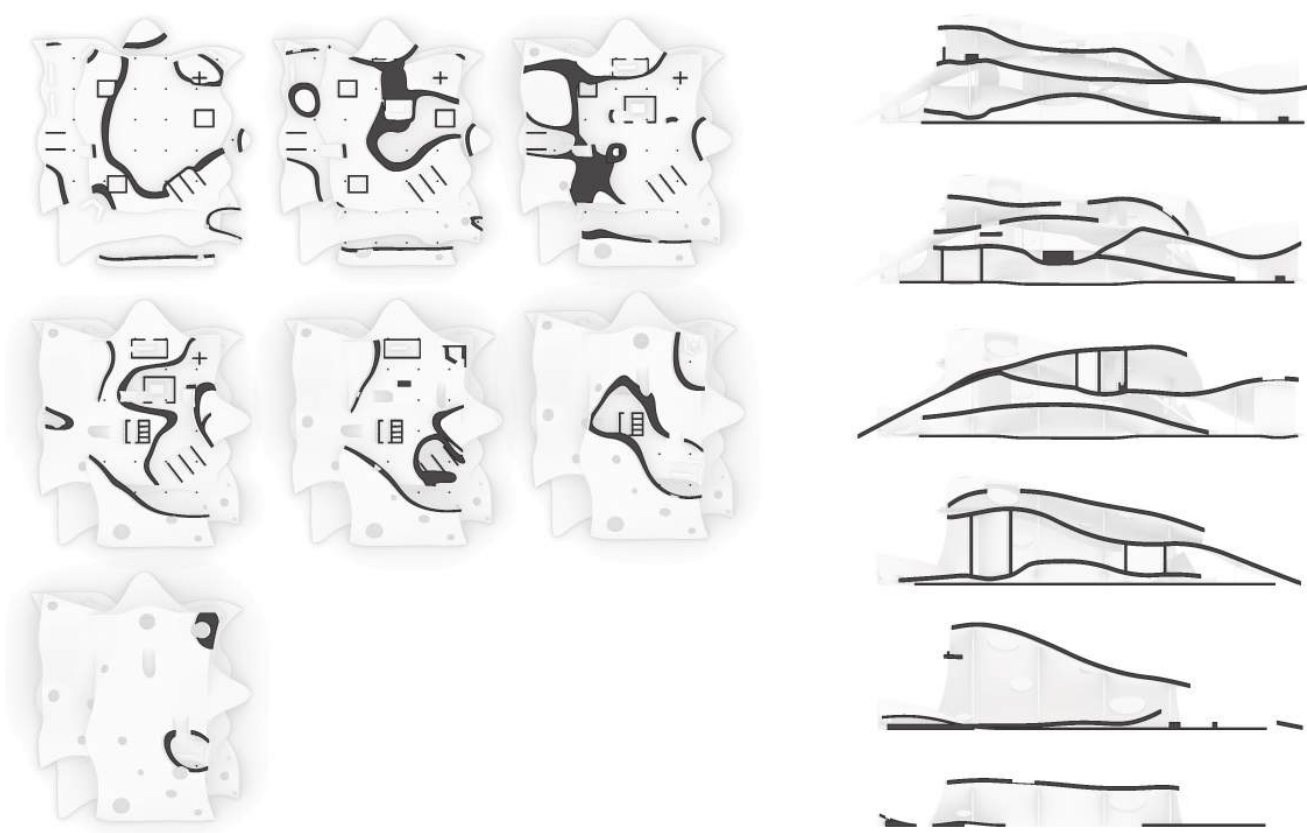


Section AA Drawing

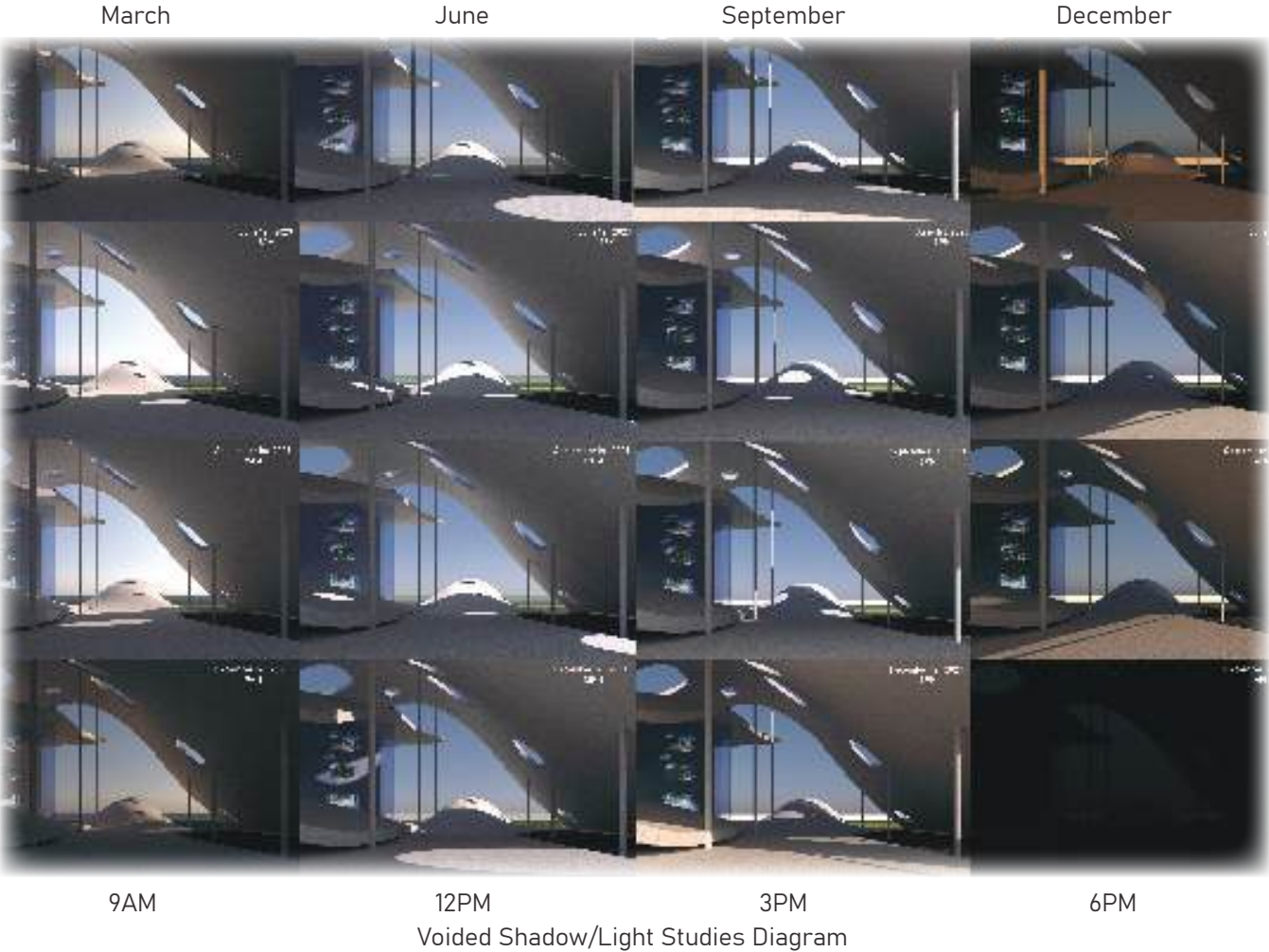


Section BB Drawing

reorganization, too much stuff on one page,
stretch out the pages



Serial Sections and Plans Diagram

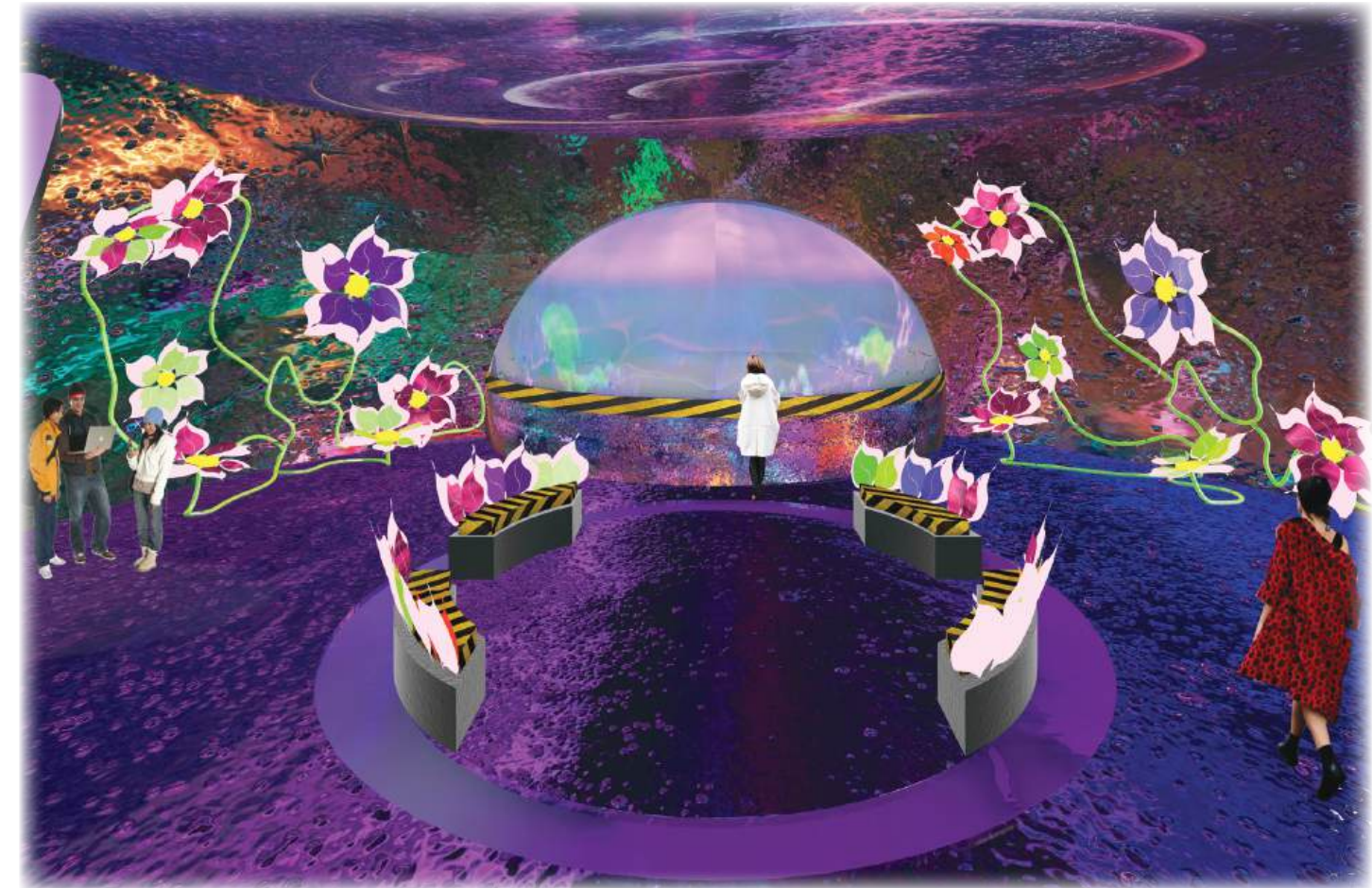


Voided Shadow/Light Studies Diagram

PEARLESCENT

STUDIO: JEFFERY RAWLINS
FALL 2023

For our small opening project and/or exercise, we were tasked with adding our own intervention to a space, preferably a space we've personally experienced, without taking away its original charm. I chose to re-represent the upper-floor dome structure from inside Meow Wolf's Omega Mart in Las Vegas. I wanted to keep the original design in mind which was a floral, galactic dome with minimal seating to really take in the experience.



Higher Angle Interior Render



Lower Angle Interior Render



Close-up Flower Seats and Design

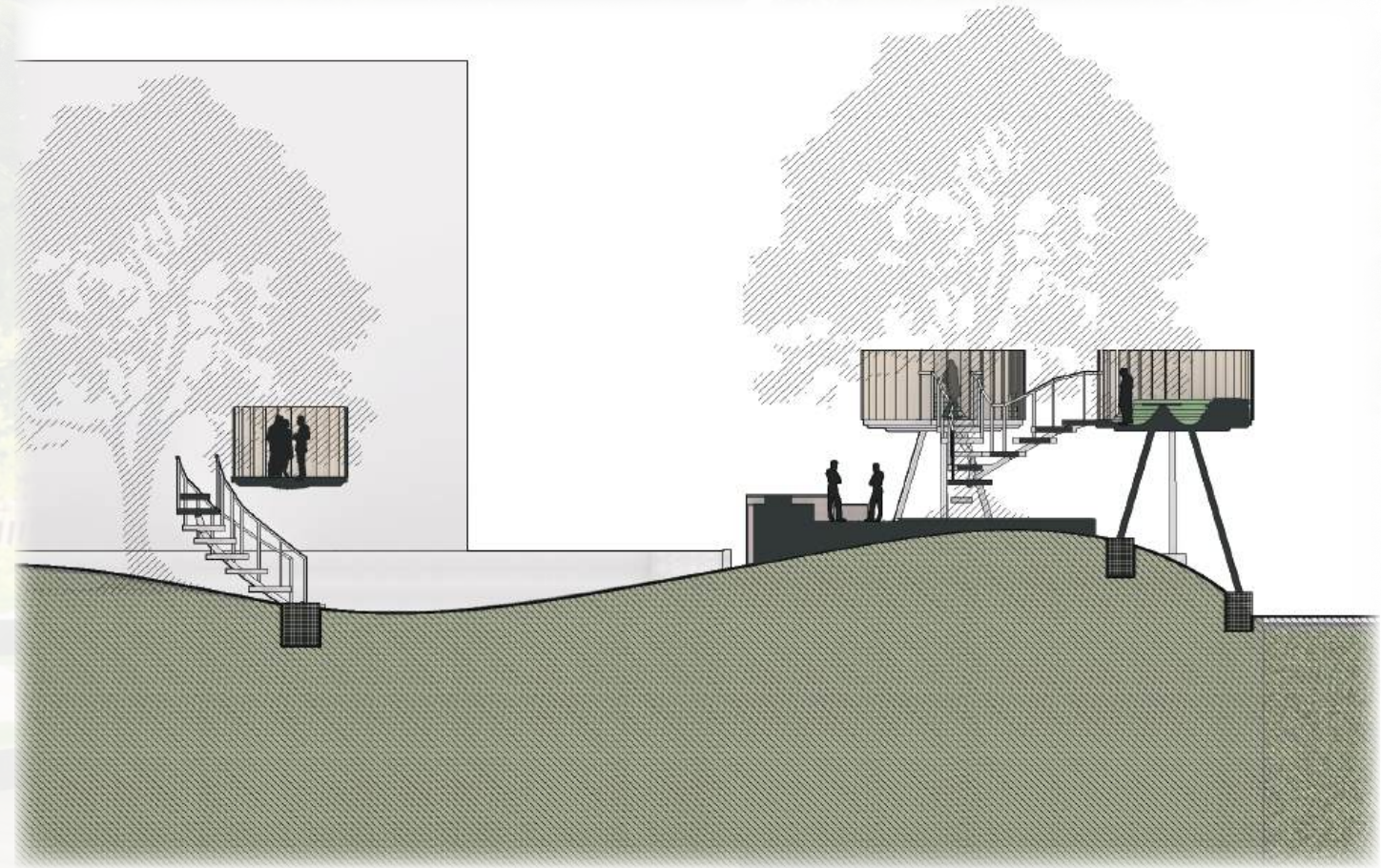
GREENSPACE

STUDIO: JEFFERY RAWLINS
FALL 2023

Following the intro project, our studio was similarly instructed to choose an area to re-interpret with the goal of keeping its original charm, but this time we chose within a close radius of Bowman Hall on the University of Kentucky campus. I chose to re-interpret the greenspace in front of the T.H Morgan building on campus and wanted to bring it to life with my design. I first began by creating a cardboard site model and putting my idea's into 1/8th scale, creating numerous iterations. I finalized the project by designing a 20 person seating area, and three private spaces designed for three people.



T.H Morgan & Greenspace Physical Cardboard Model



20 Person & Private Seating Area Section



20-Person Seating and Singular 3-Person Tower



Showcasing Topography in Seating



Seating Area's



Private Seating Area's

LIVE, WORK, PLAY

STUDIO: JEFFERY RAWLINS
FALL 2023 MIDTERM

The very programs of this project are in the name! In this project, I designed a multi-purpose building complex that serves the purpose of being used as a place of living, working, and entertainment or hobby. Prior, we created a narrative based on two people who would use and access this space, detailing where they live, where they work, and what best interests of theirs would translate into a "playspace". The two people I described in my narrative are video game players, and have a passion for making. With this in mind, I based my design on an 8-bit structure, using legos as a precedent. My programs consist of a Cafe, Studio, and Apartment space. The programs are colorcoded, the Cafe is Orange, the Apartment is Red & Purple, and the studio is Blue.



Exterior Angle





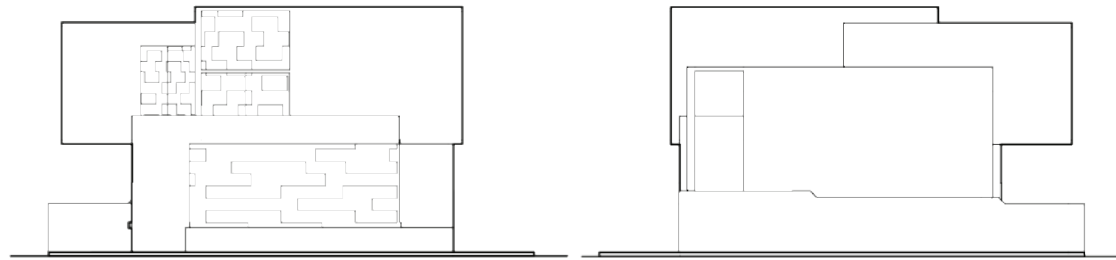
Bedroom Renders



1st Floor Plan



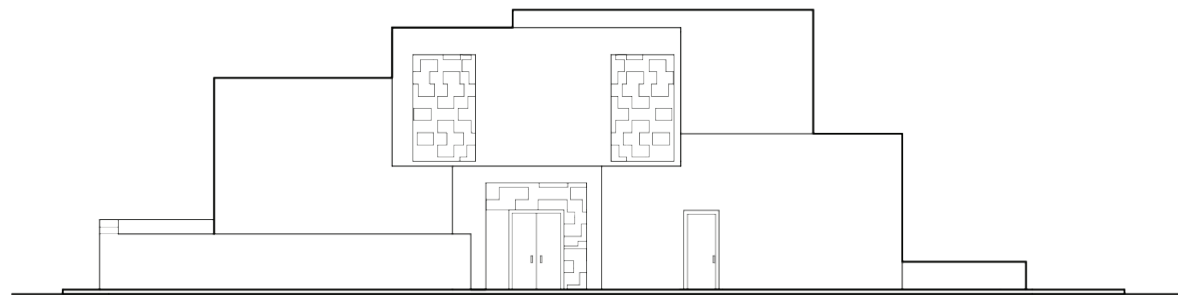
2nd Floor Plan



Short Elevations






Long Elevation- Front Facade

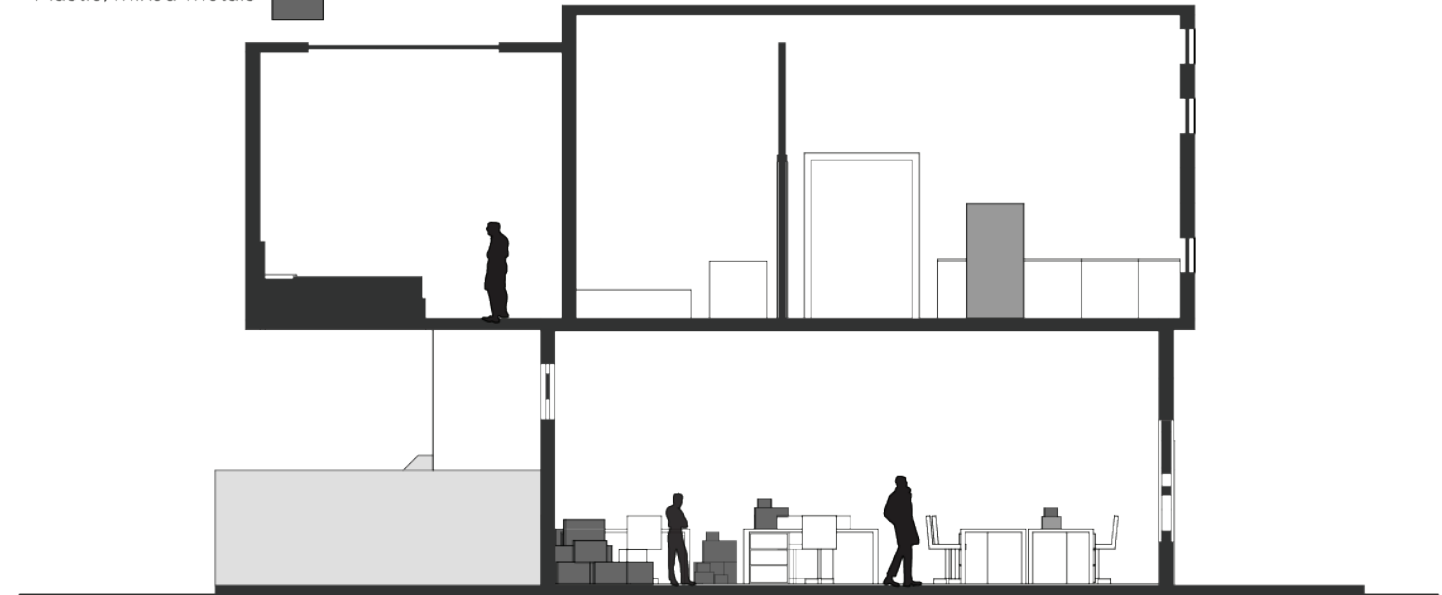


Long Elevation- Back Facade



Bedroom Renders

Steel- 
 Grass/Hedge- 
 Plastic/Mixed Metals- 



Short Section Materials

SKIN & BONES

STUDIO: JEFFERY RAWLINS
FALL 2023 FINAL

For the final project, our studio was to design a fashion institute to fit into the empty lot at 400 E. Main Street in Lexington, KY. For my concept, I wanted to use a base logic of a wavy curtain. I introduced soft concrete walls that open like them. They then introduce entrances and windows. In the interior, the "curtain" walls intersect to create spaces. I primarily chose this form as it, to me, can also embody the flowiness of fabric in a fashion institute. I incorporated the programs of a Large Event Space, which includes a catwalk for fashion shows and other events, an Exhibition Space, Education Space, an outdoor Patio offset from the Large Event Space, and Offices.





Front Entrances



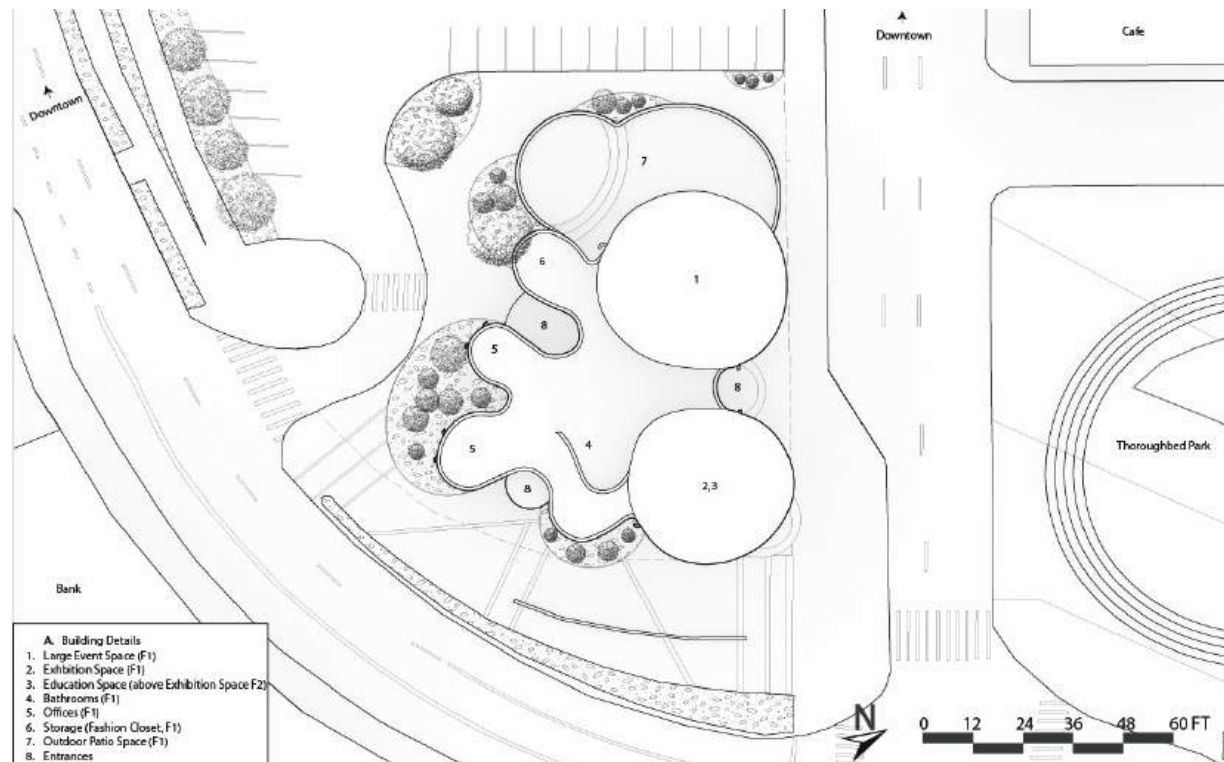
Exhibition Space



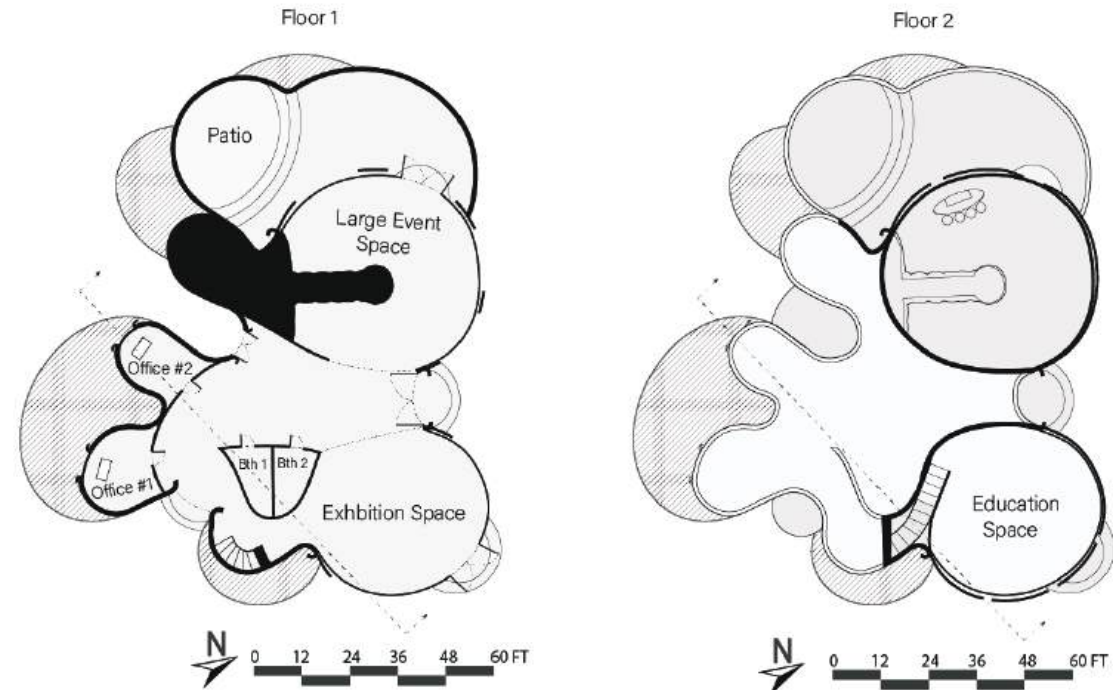
Back Entrance



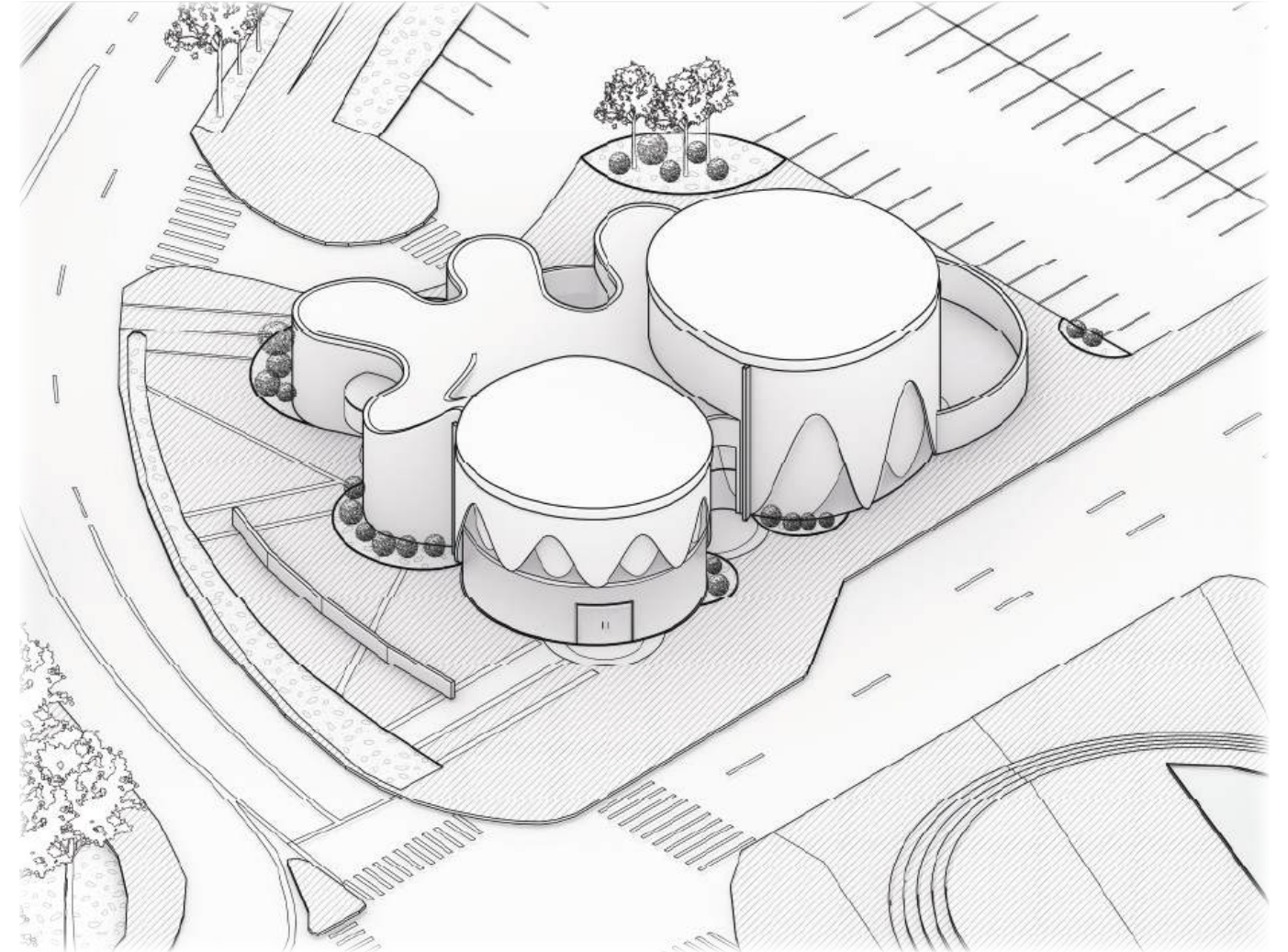
Outdoor Patio



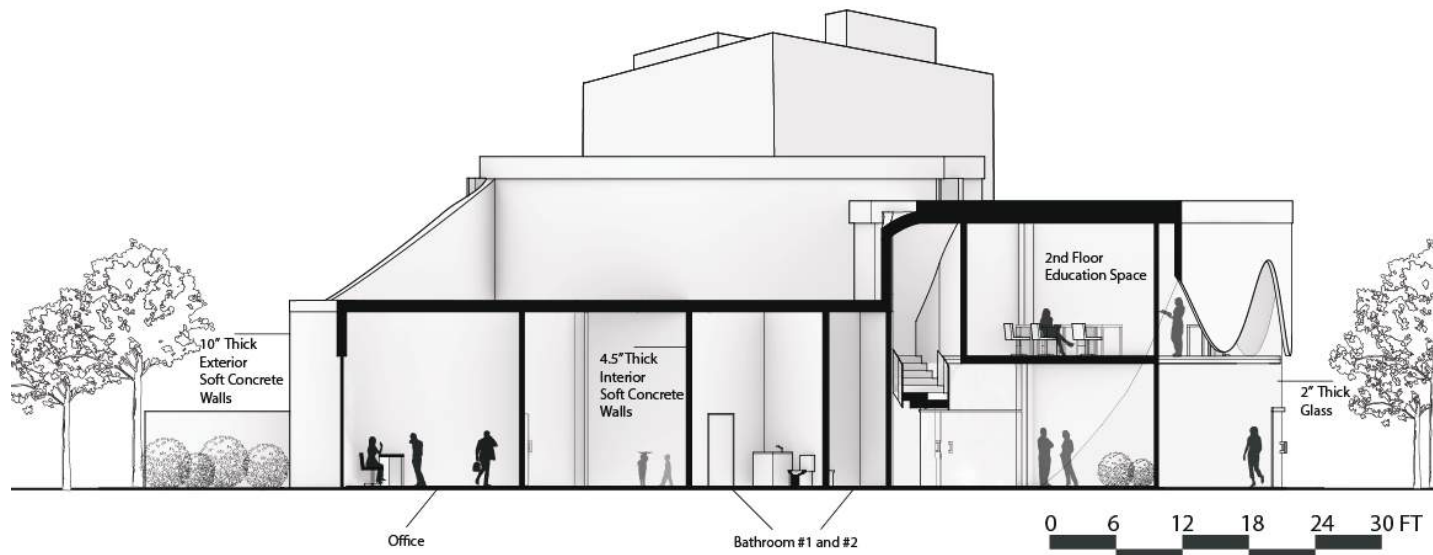
Site Plan



First and Second Floor Plans

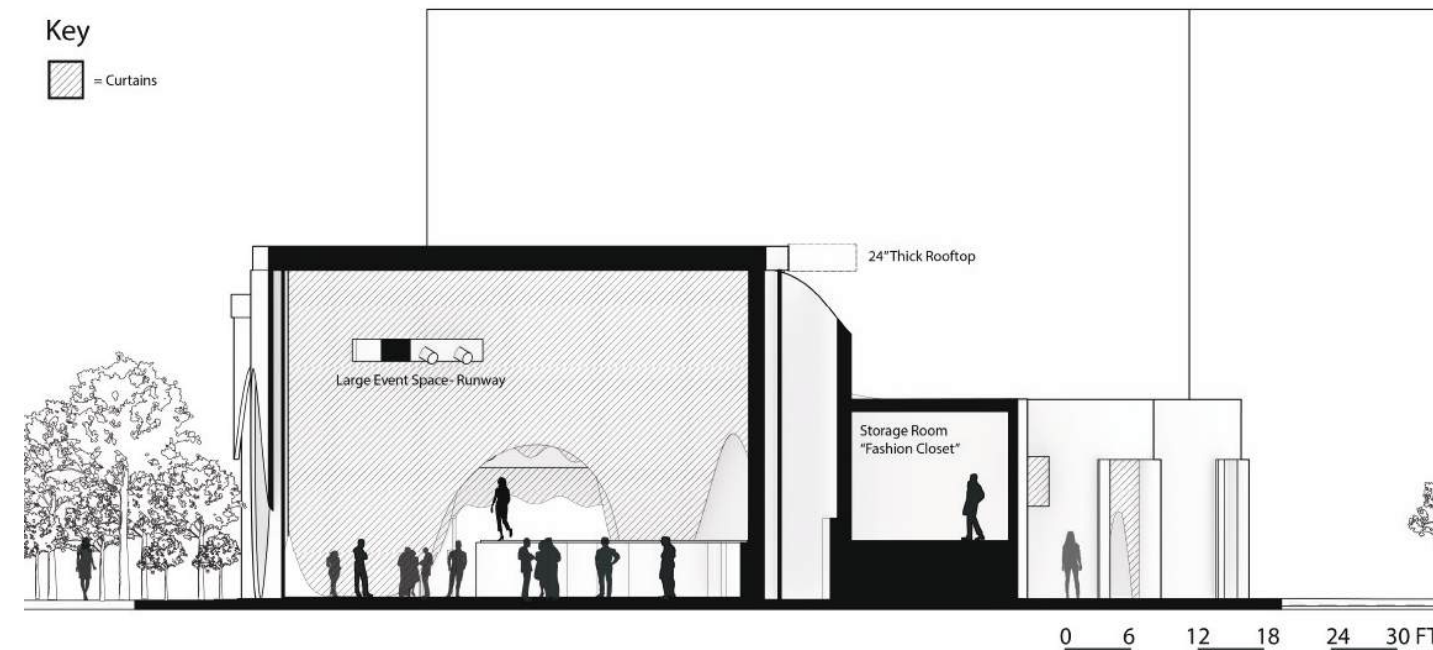


Site Axonometric

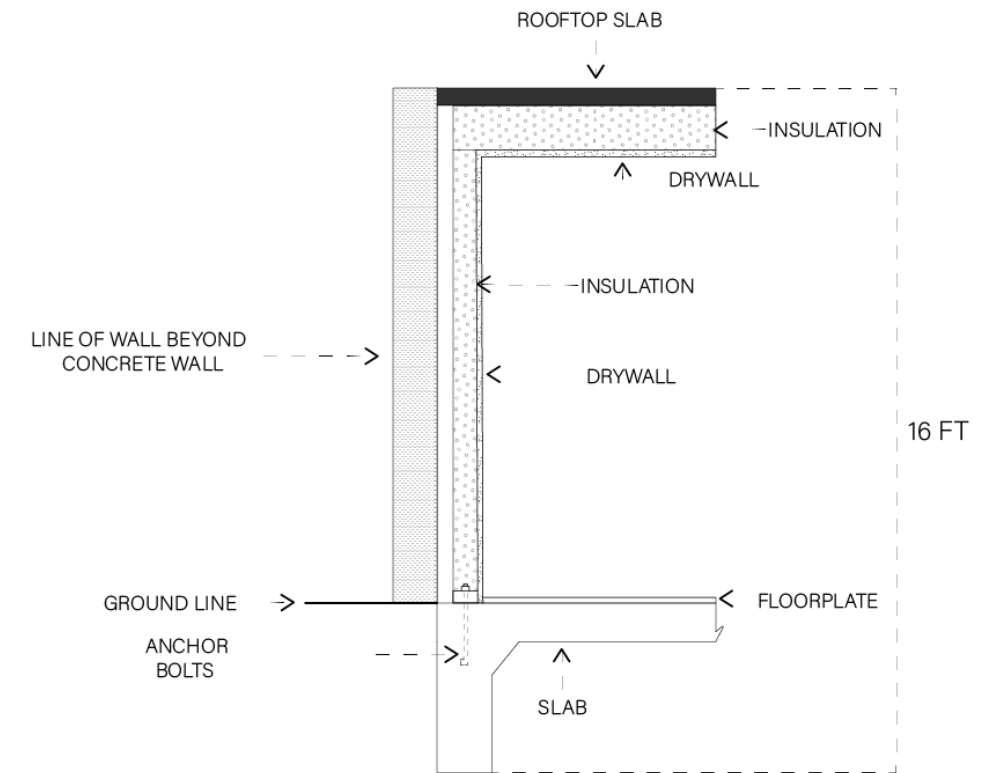


Site Section A

Key



Site Section B



Wall Section



Structural Diagram

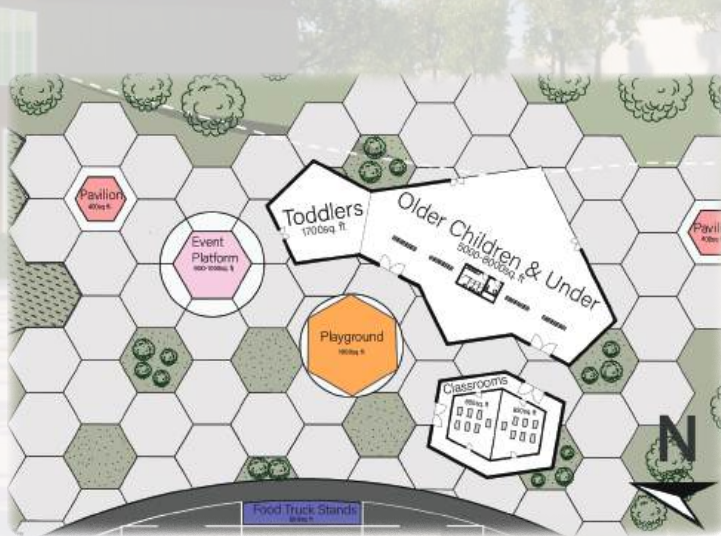
CHILDRENS LIBRARY



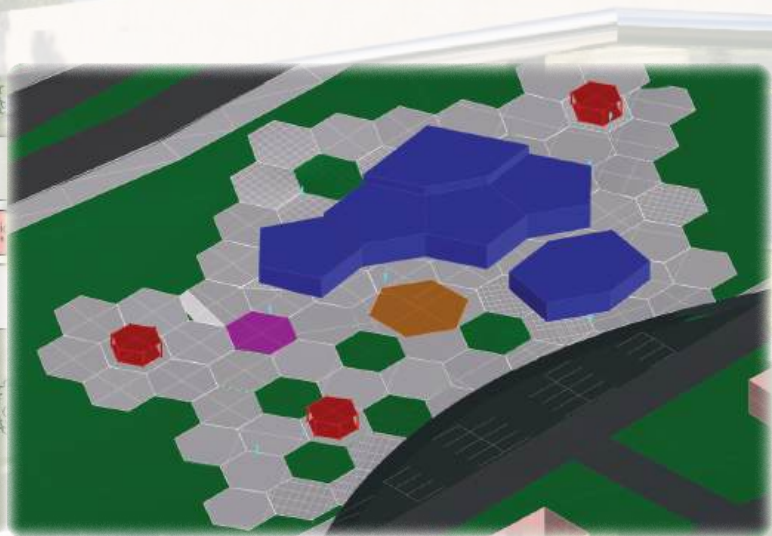
STUDIO: SEDA KAYIM
SPRING 2024

For the half semester-long project, I proposed a children's library that acts as an urban commons for the surrounding communities of Davis Park, Lexington, KY. Mobility is a priority in this project, cultivating a family-oriented audience. The library features a small space for younger children, a creative arts space, a general library space for older children, and classrooms to serve educational purposes. An additional outdoor event platform and social staircases are also present. Considering Davis Park's history as "Bottomlands", which are lower-lying land prone to flooding, I've introduced vegetative swales to serve the purpose of controlling flood waters and doubles as a landscape feature.

PROGRESS WORK



Midterm Plan Iteration



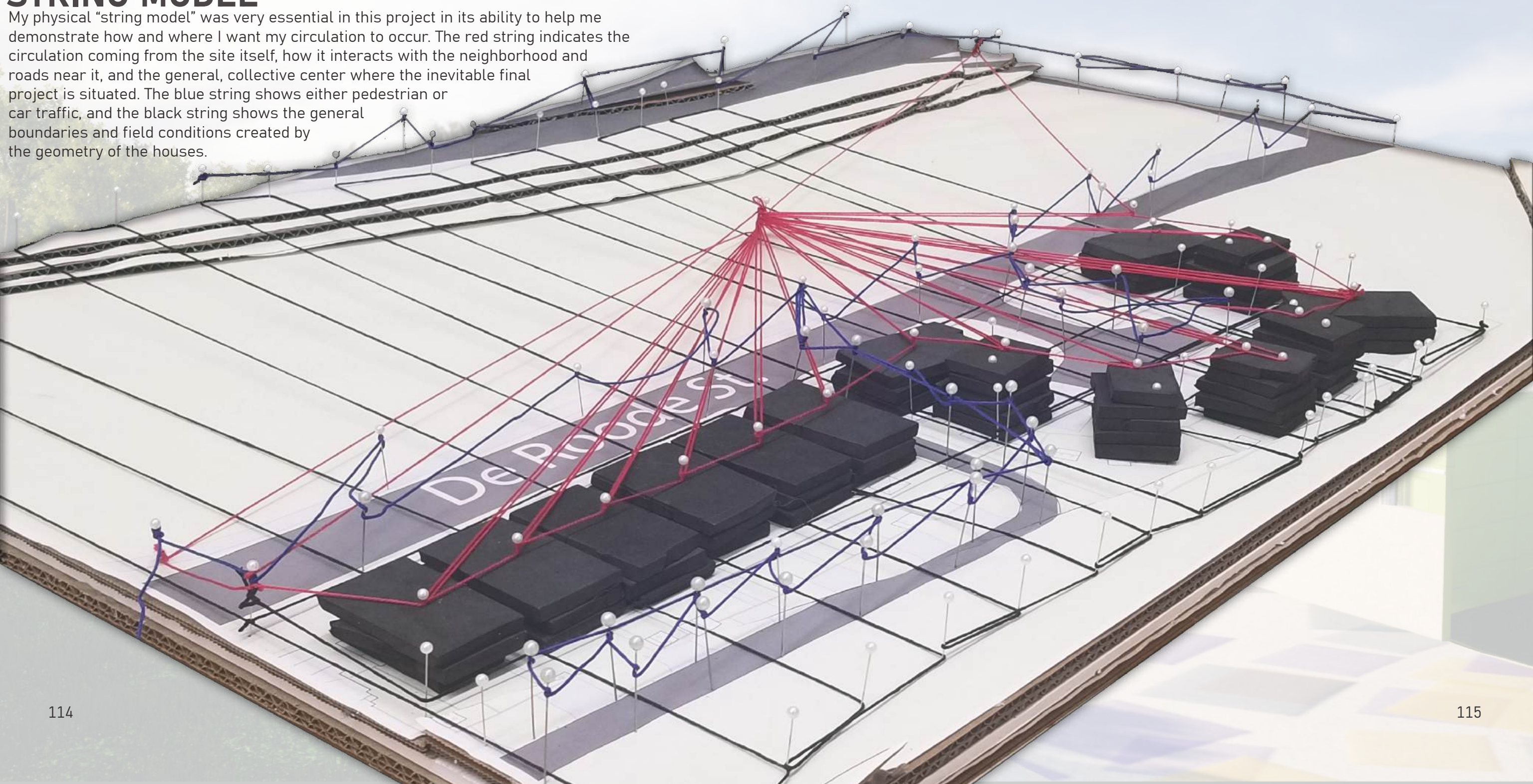
Midterm 3D Iteration

First understanding the site through analysis, showing where residential units are, where a lot of noise is generated including traffic, and the outline of the site.

Next is my initial placing or iteration of where I wanted the functions and pathing located to assure good flow for the neighborhood.

STRING MODEL

My physical "string model" was very essential in this project in its ability to help me demonstrate how and where I want my circulation to occur. The red string indicates the circulation coming from the site itself, how it interacts with the neighborhood and roads near it, and the general, collective center where the inevitable final project is situated. The blue string shows either pedestrian or car traffic, and the black string shows the general boundaries and field conditions created by the geometry of the houses.





Front Entrance



General Library Space



Back Entrance



Interactive Young-Child Space



Creative Space



Main Foyer, looking towards Young-Child (L) and Creative Spaces (R)

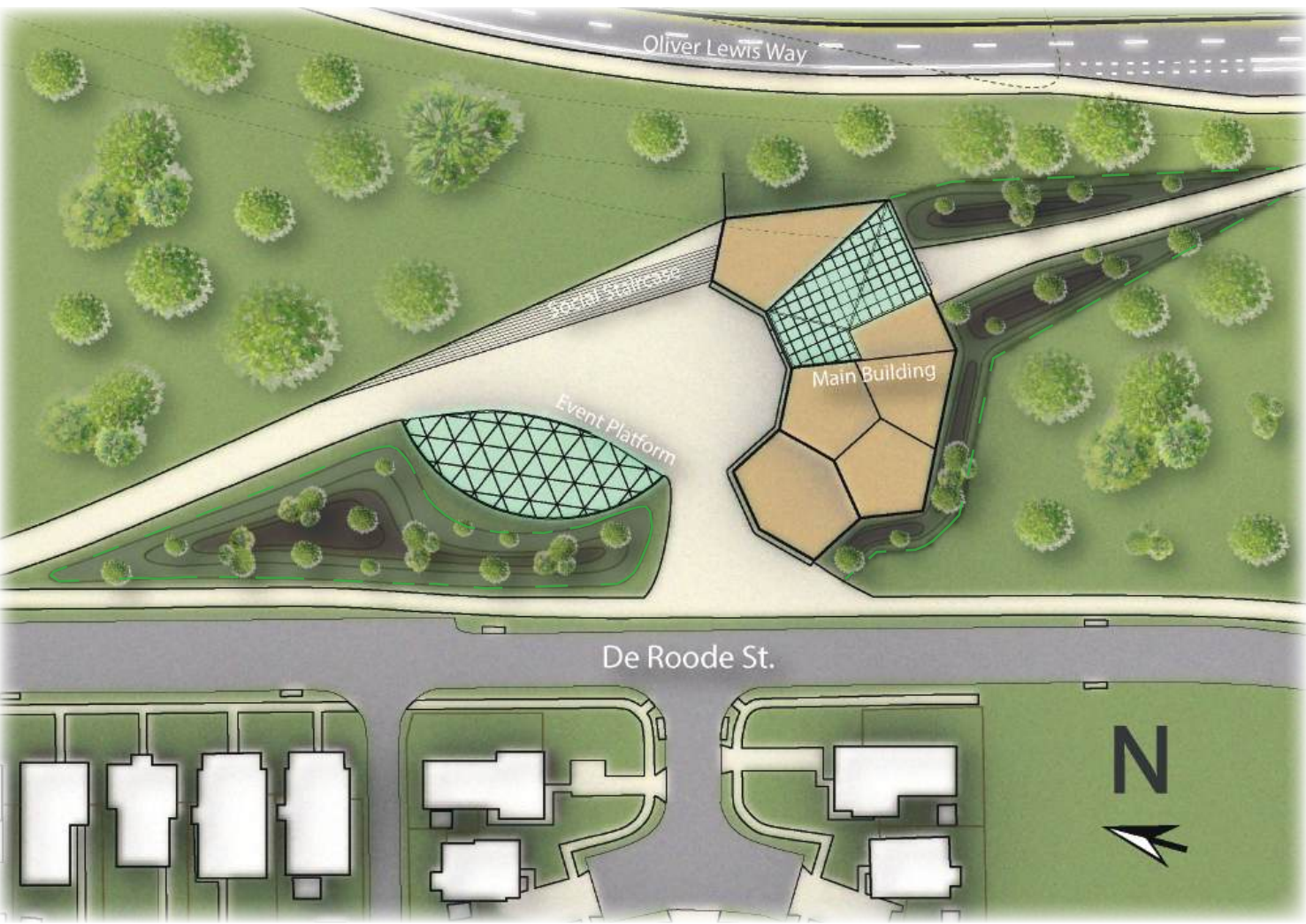


Faculty Space



Main Foyer, looking at Creative Space (L), Bathrooms (M), and General Library (R)

SITE PLAN



The additional important aspect of the project is outlined here, the green-outlined vegetative swale systems that helped inform the landscaping for this project.

FLOOR PLANS

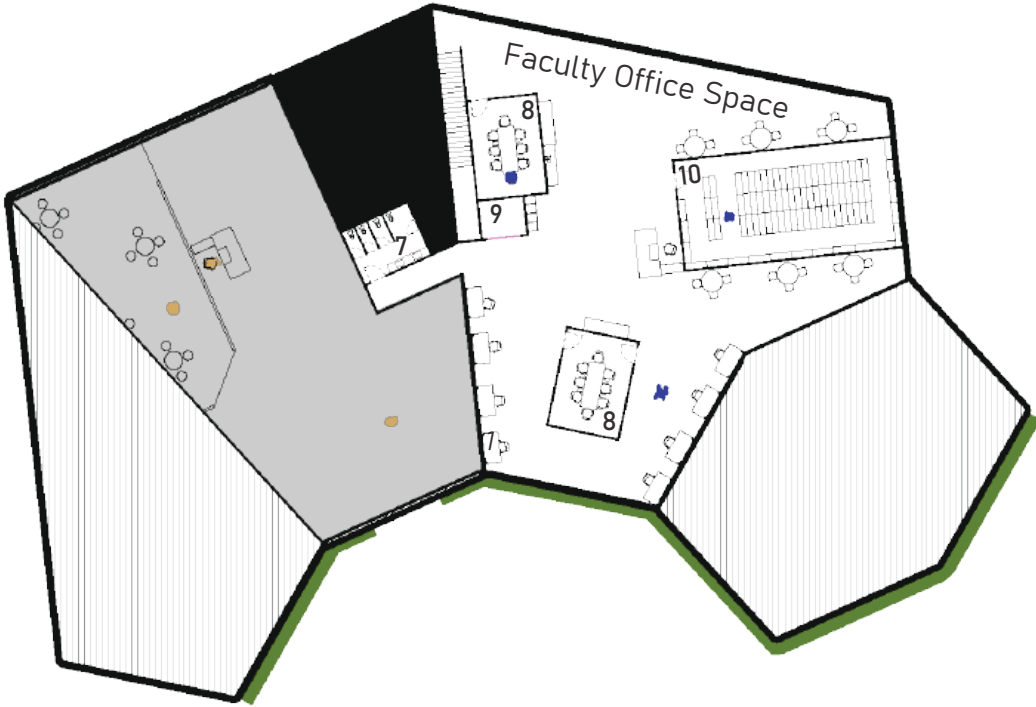
Floor 1 Key

- 1. Young Child Library Space
- 2. Creative Space
- 3. General Library Space
- 4. Locker Room & Bathrooms
- 5. Classrooms

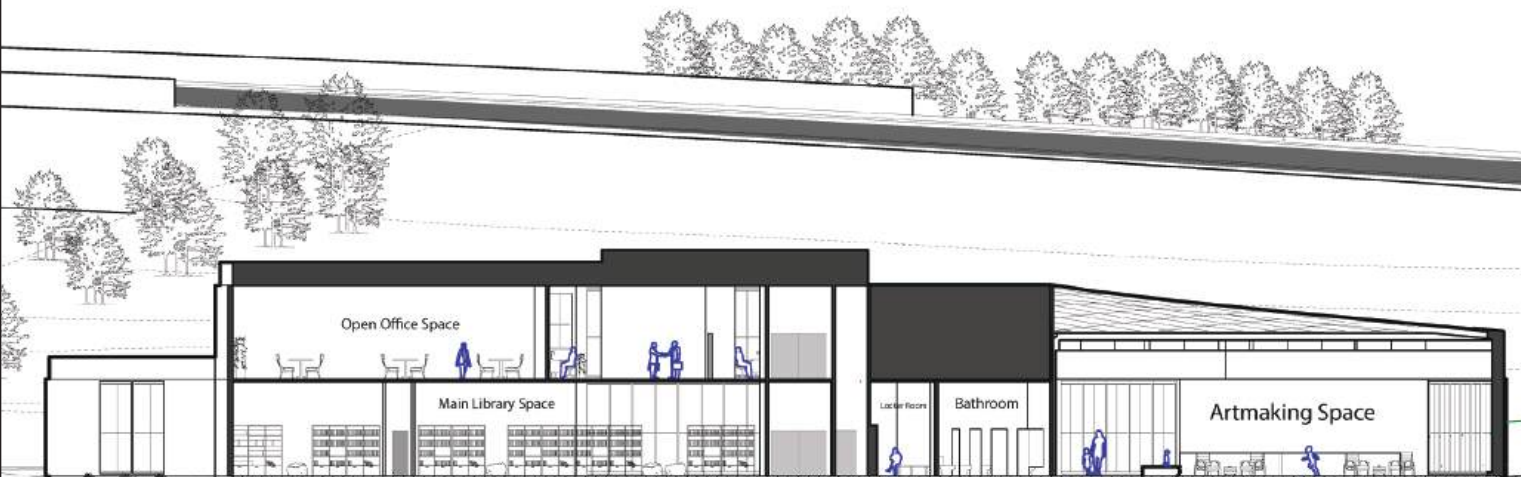


Floor 2 Key

- 7. Bathroom
- 8. Meeting Rooms
- 9. Elevator
- 10. Book Storage



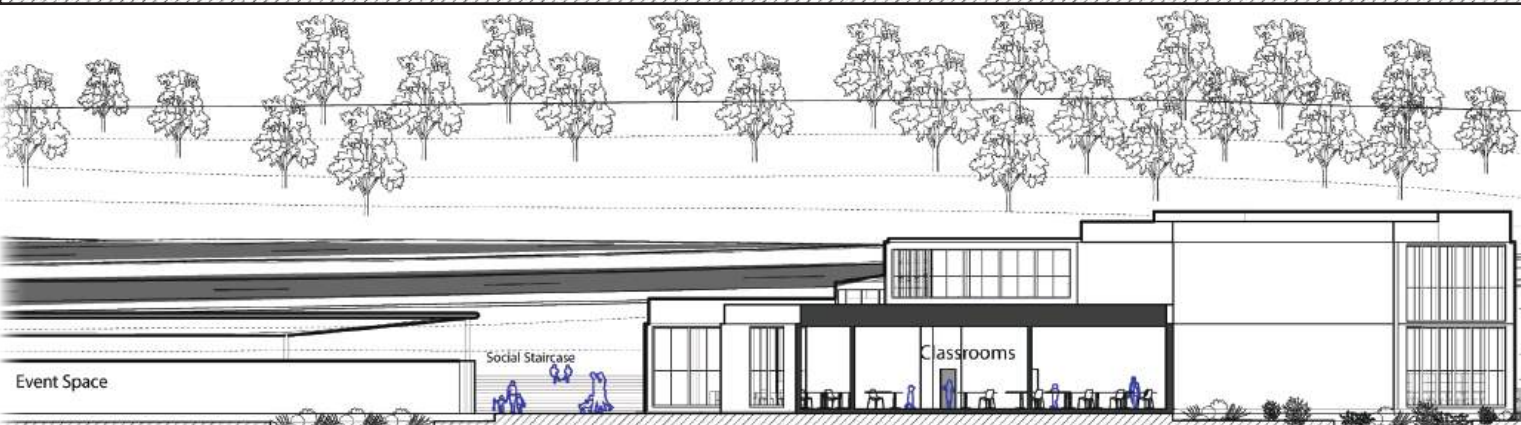
SECTIONS



Section A



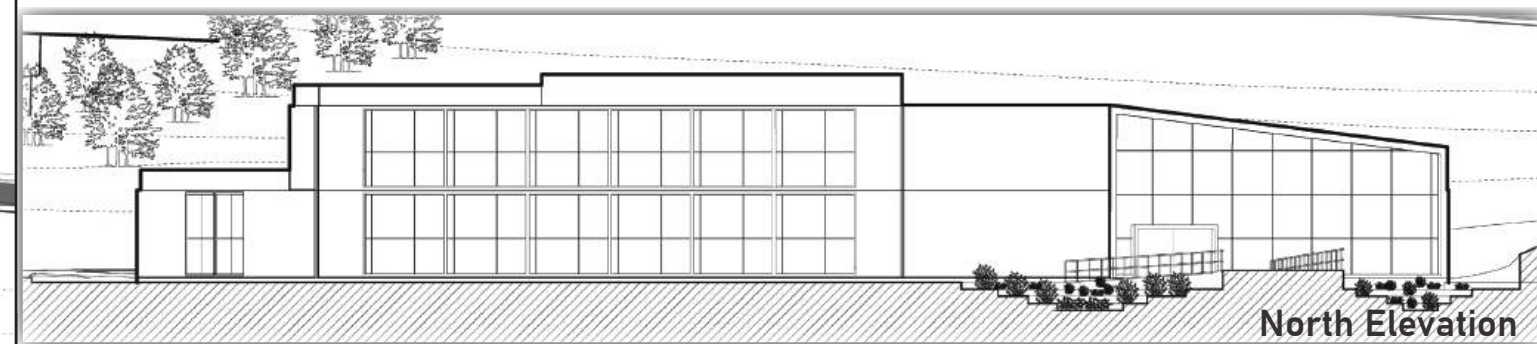
Section B



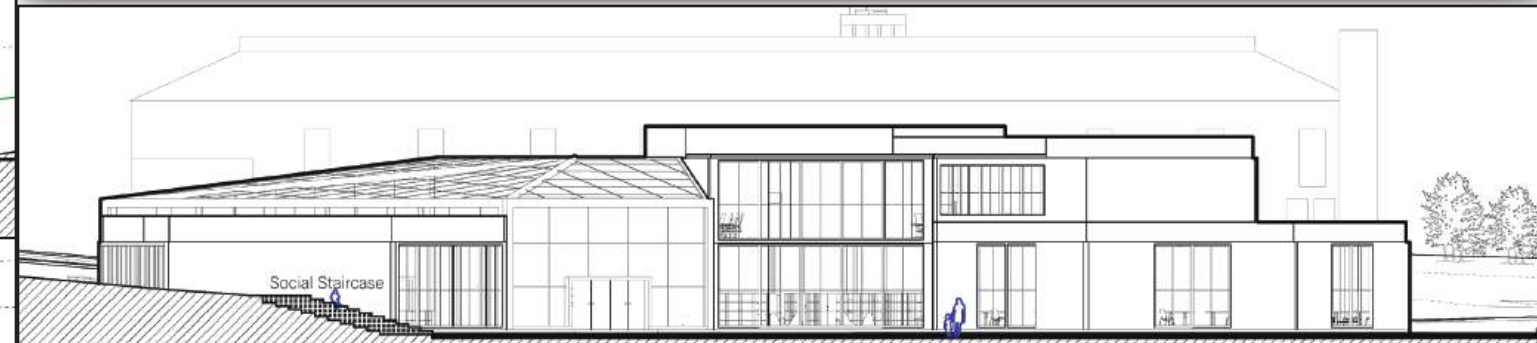
Section C

122

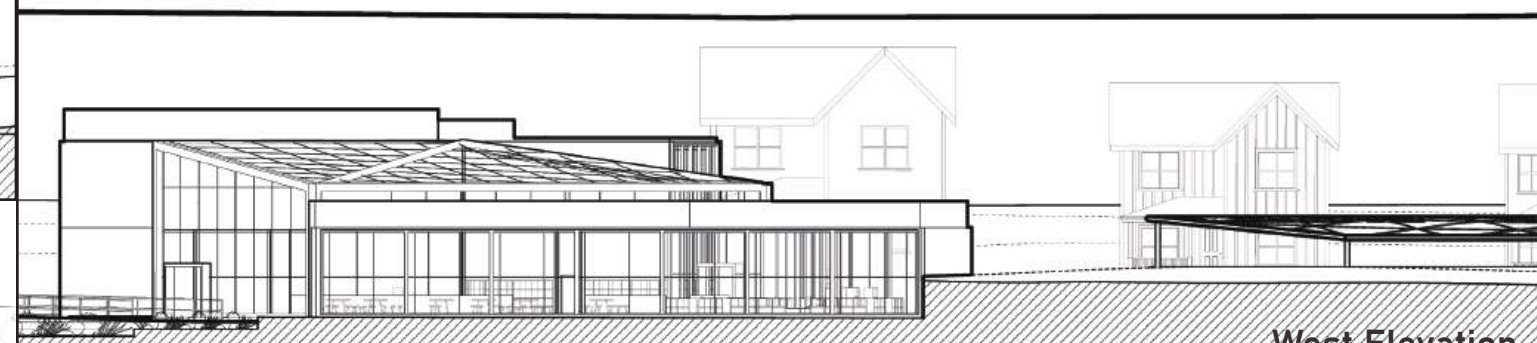
ELEVATIONS



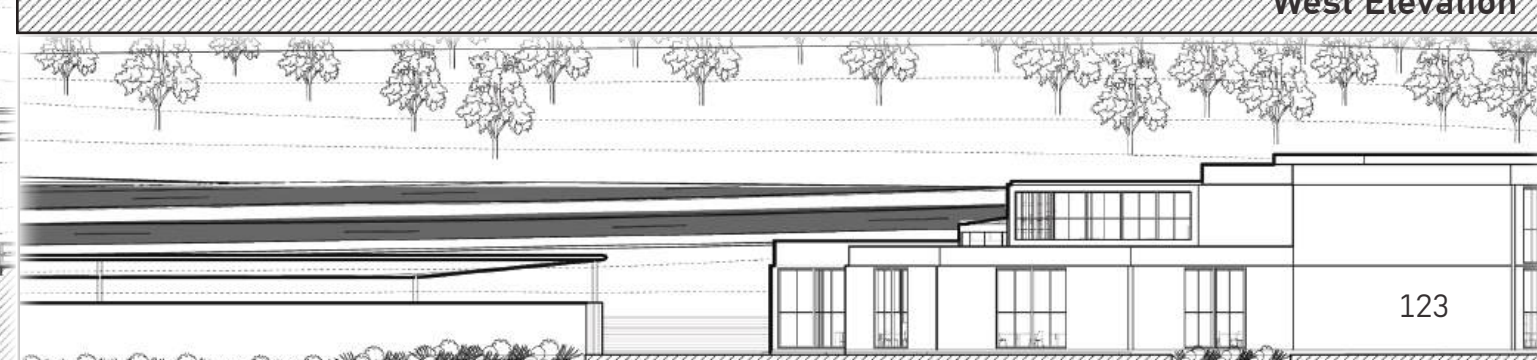
North Elevation



South Elevation



West Elevation



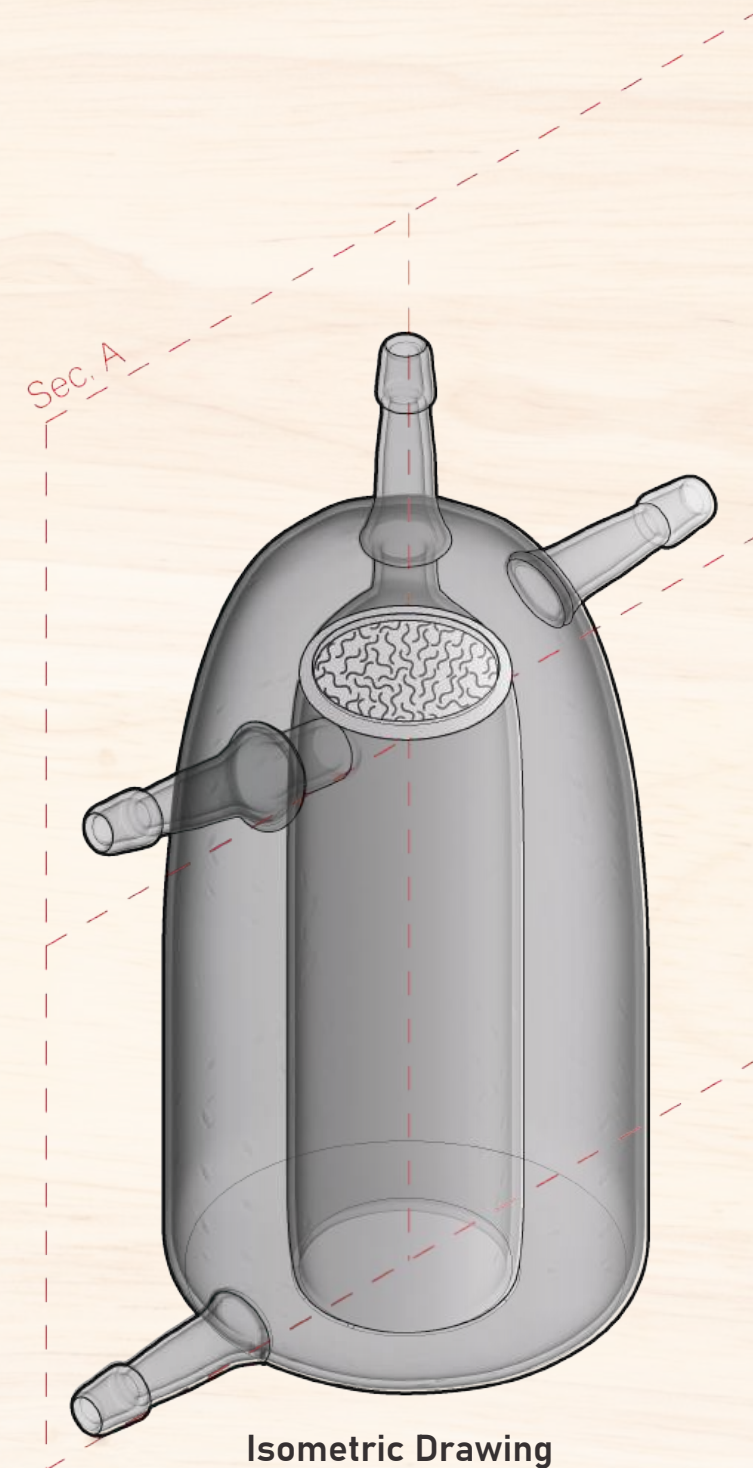
East Elevation

123

FLASK EXPERIMENTATION

STUDIO: Jonathon MacGillis
FALL 2024

For our intro project, Jonathon assigned, per groups of two, an unidentified sort of chemglass object sourced from the chemistry lab on the University of Kentucky campus. I began observation on my chosen model to figure out what it was and how it functions, finding it resembles close to a "Buchner Flask" or a "Jacketed Reactor". I inevitably blew it up to a full, occupiable scale, working primarily in section to create a multi-purpose commercial skyscraper, responding to the needs of Chicagoans.



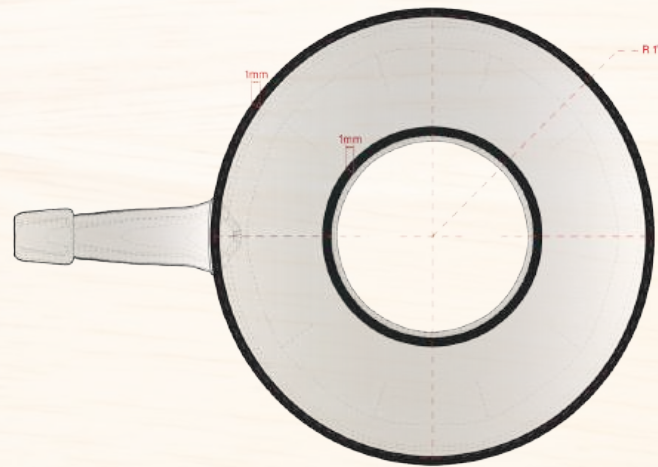
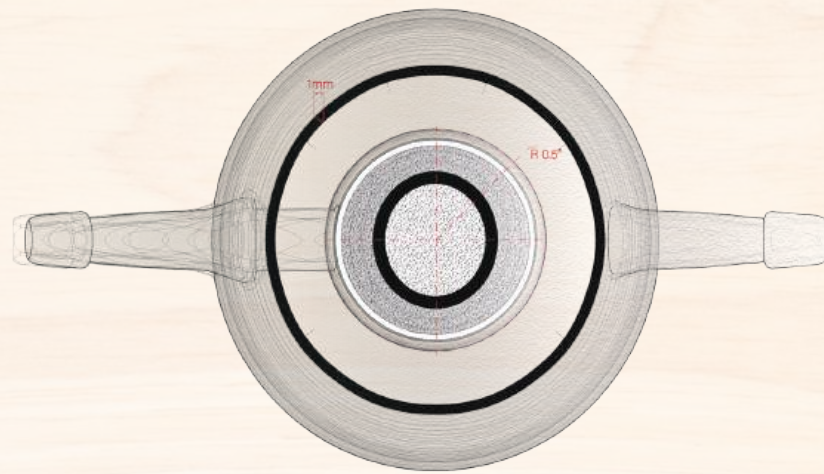
Isometric Drawing



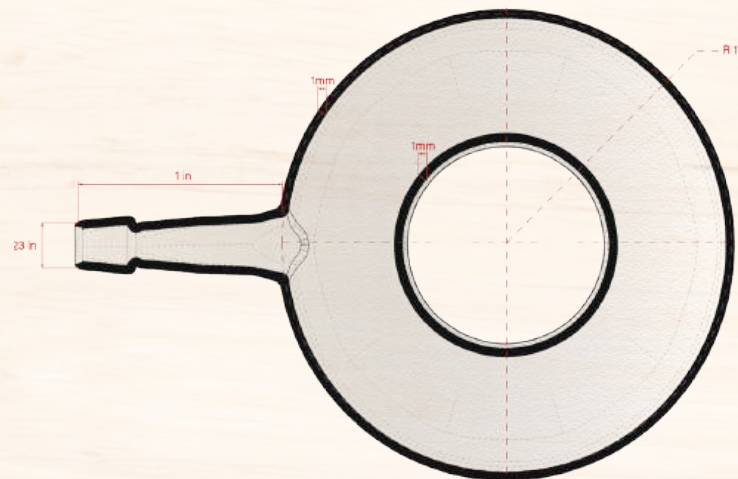
Pictures of Found Model

PLANS

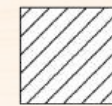
Highest Cut



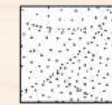
Lowest Cut



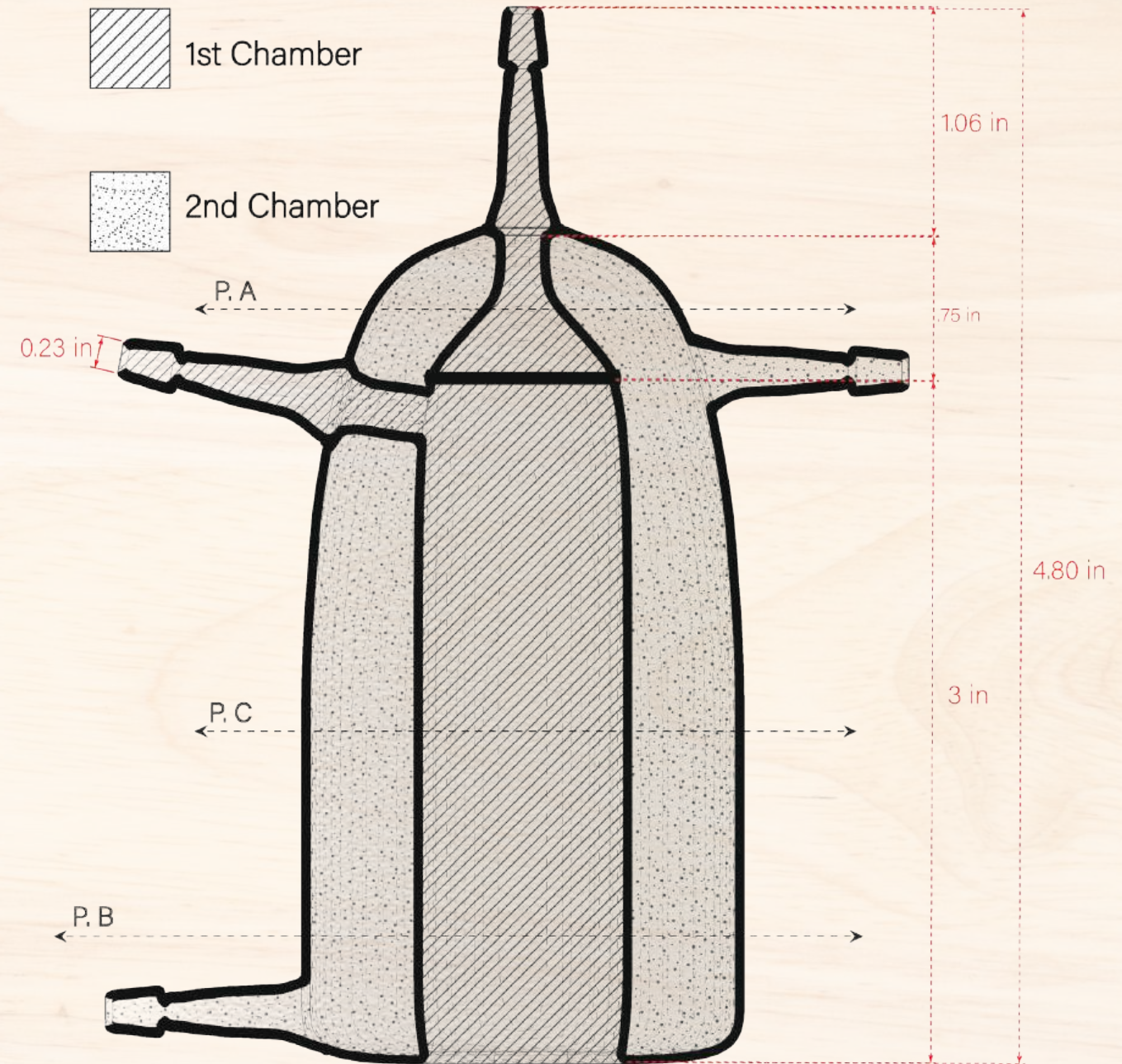
126



1st Chamber

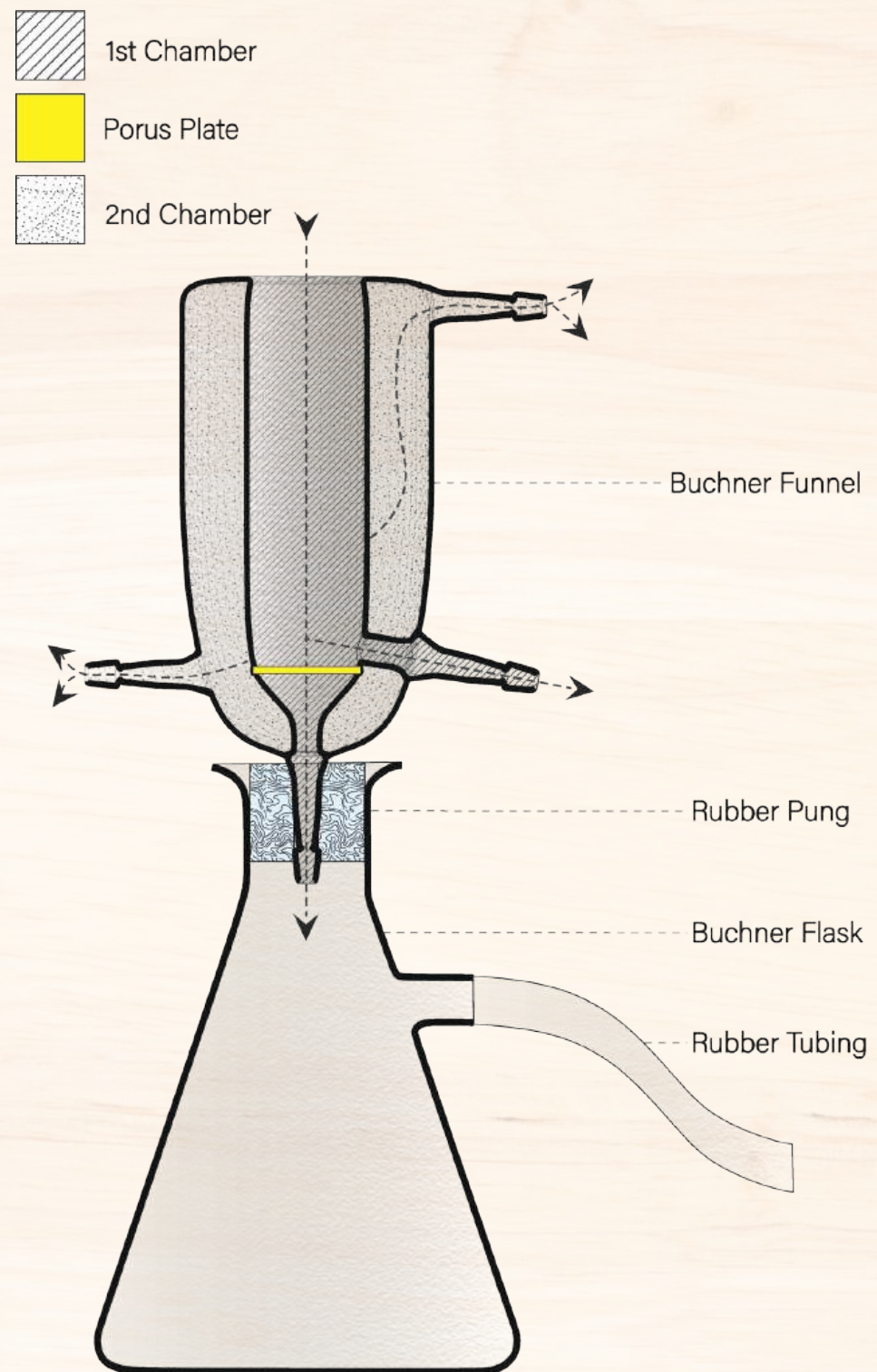


2nd Chamber

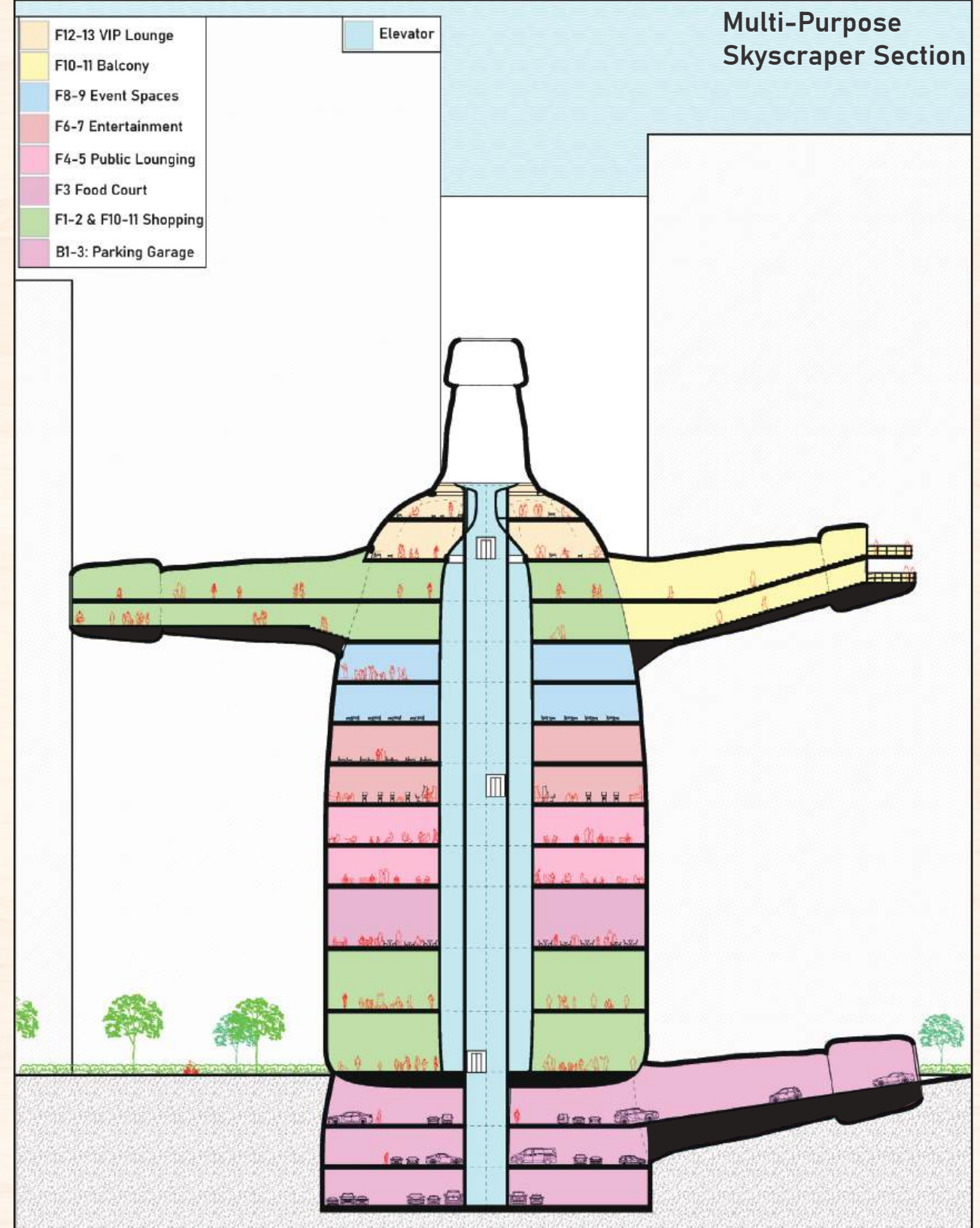


Section

127



Liquid/Gas Flow Diagram



The final scaling of the chemglass into a full-scale, occupiable skyscraper, primarily working through section to understand what is happening in each compartment. This is the beginning of how we started to envision commercial lots centered in the Chicago, Illinois landscape.

PERFORMING ARTS CENTER

STUDIO: Jonathon MacGillis
Co-Partner: Peyton Ray, College of Design Student
FALL 2024 FINAL

Underground Concert Hall View

- Usage of exterior form decoration as a meme for the cloud design.

Using the chemglass experiment as a boost, me and my partner Peyton Ray went through iterative processes to design a Performing Arts Center situated on the Harrison Field by the UIC in Chicago, Illinois. Developing the project, we used the circulation from the surrounding UIC Campus to help us determine where to situate programs to best help respond to student needs. As the site is right on the border of campus alongside the busy and loud Eisenhower Expressway, we primarily worked with noise as a concept design for our project, taking it into heavy consideration and placing programs and features accordingly.

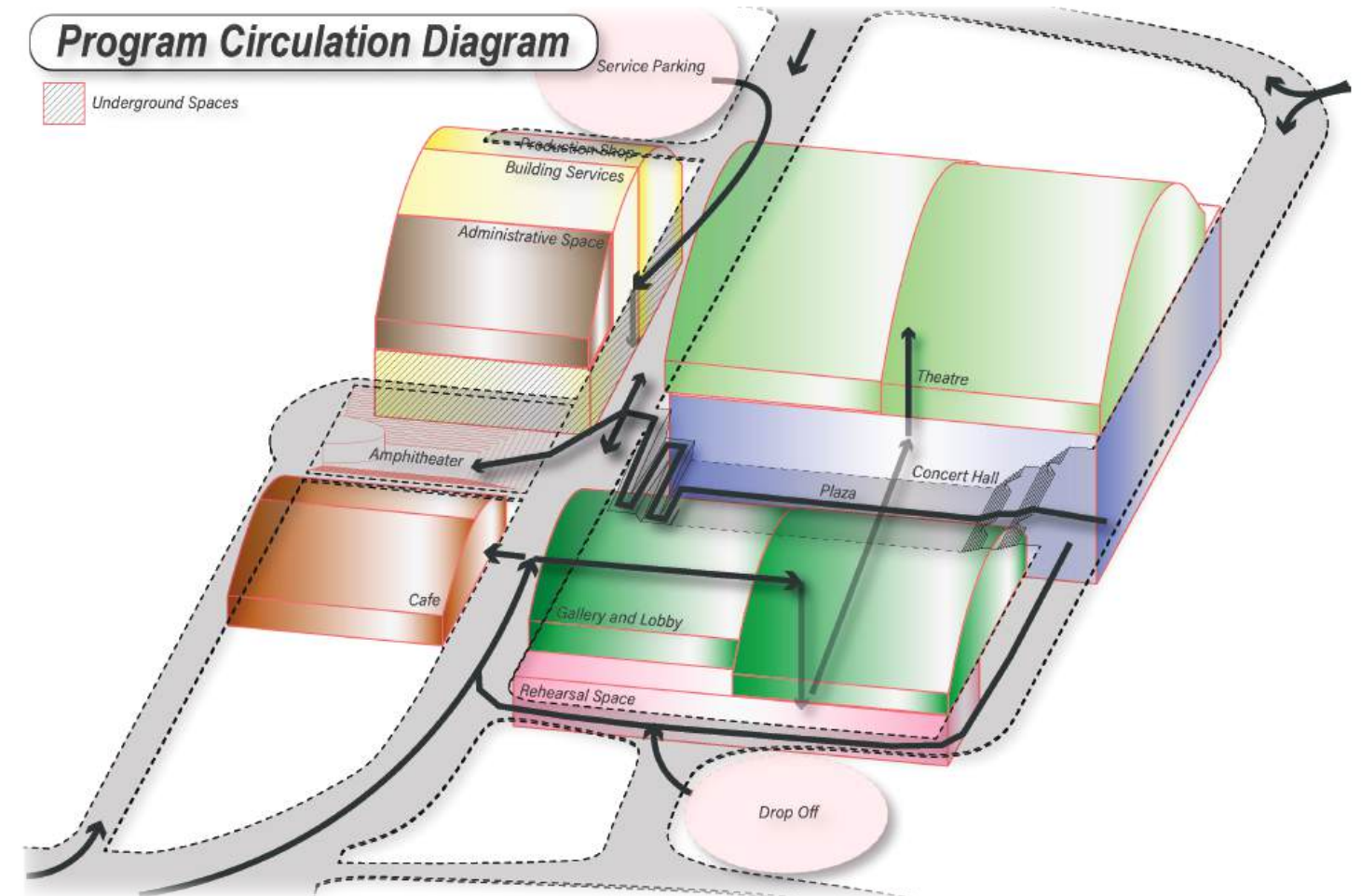
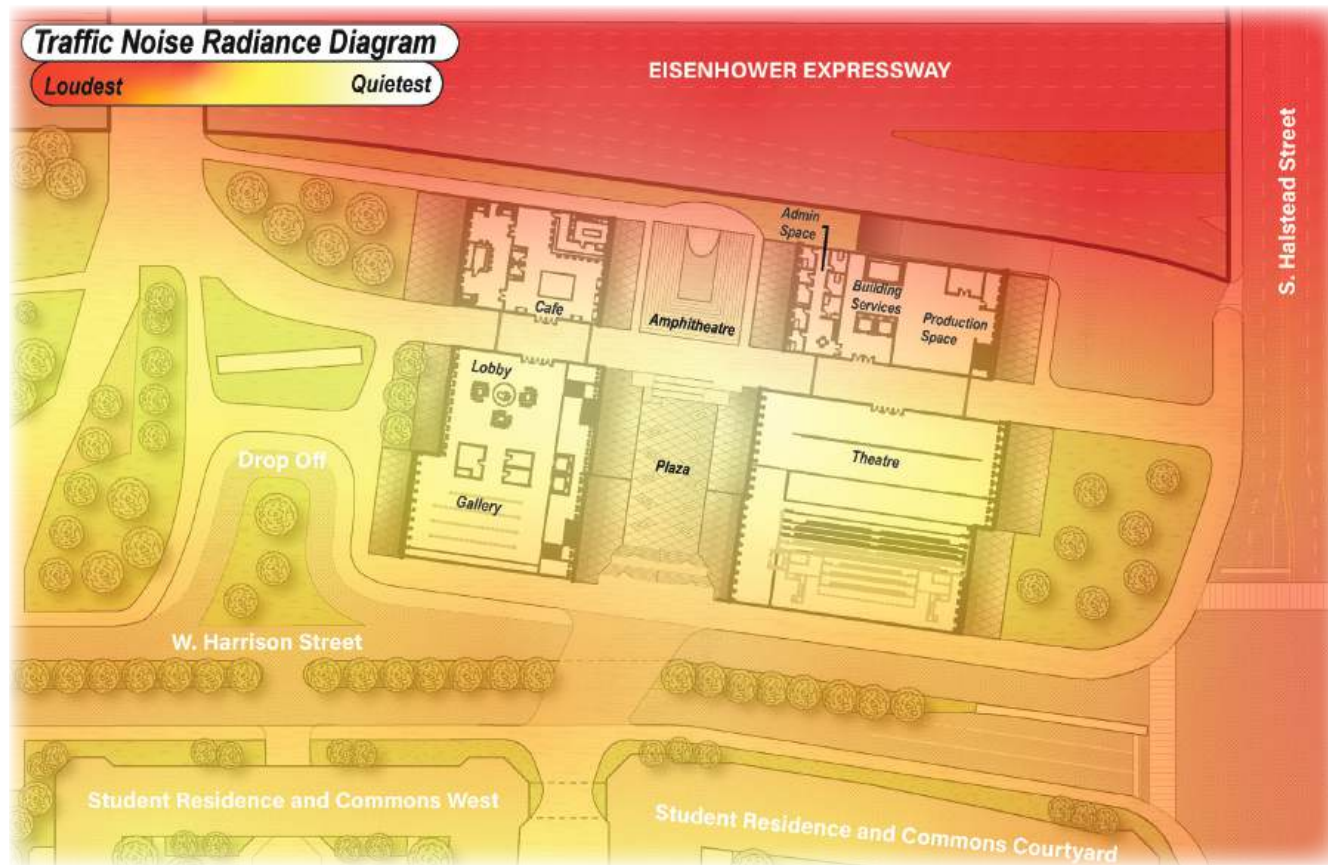
UNDERSTANDING THE SITE, DIAGRAMS



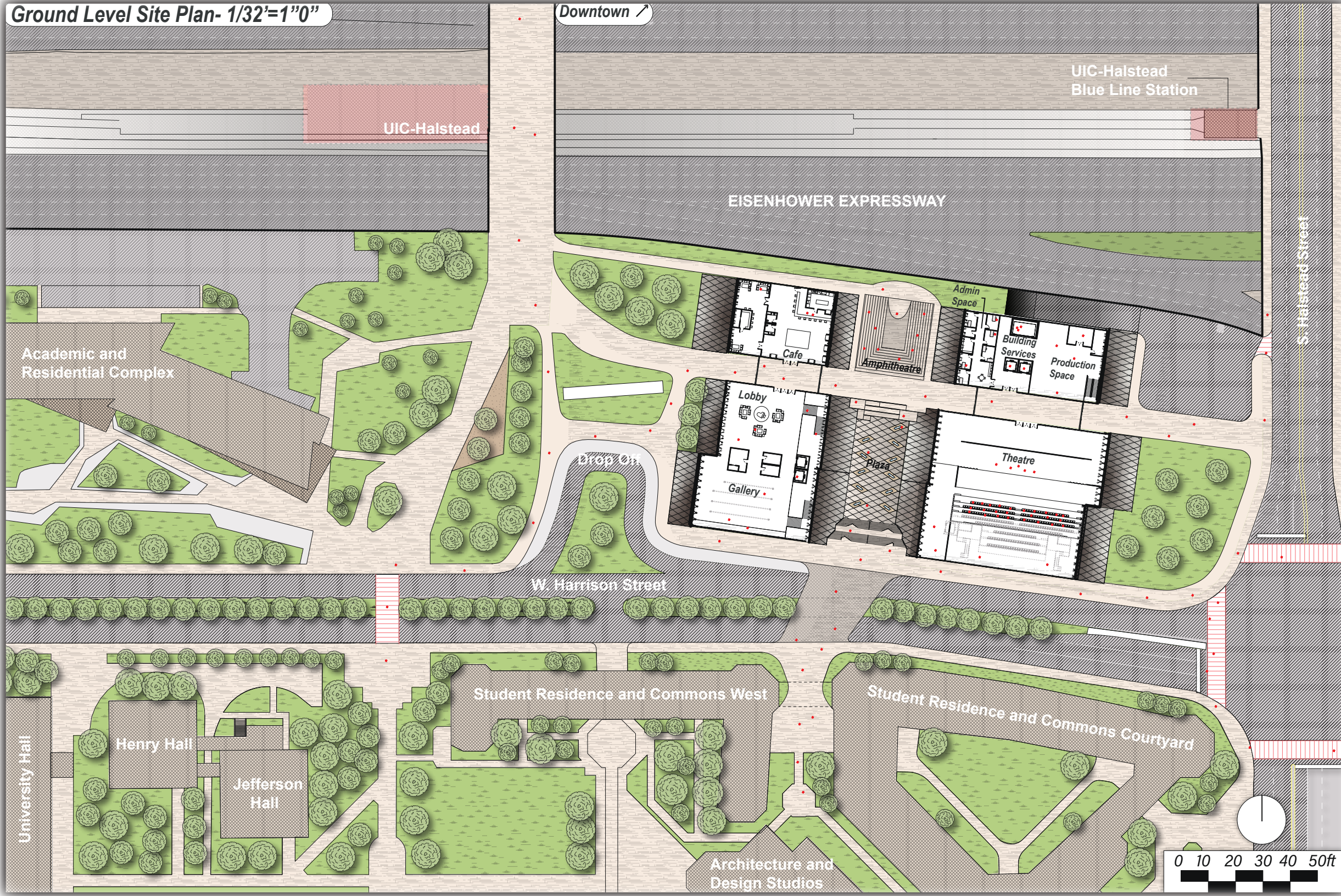
Suitable Programs Near Louder External Noise

Requires Lighter External Noise

When we first layed out our project, we ordered programs based on their external noise needs. This shows programs that could work alongside and be suitable with louder noises around the site, and other programs that should be put in areas that have lighter external noises.

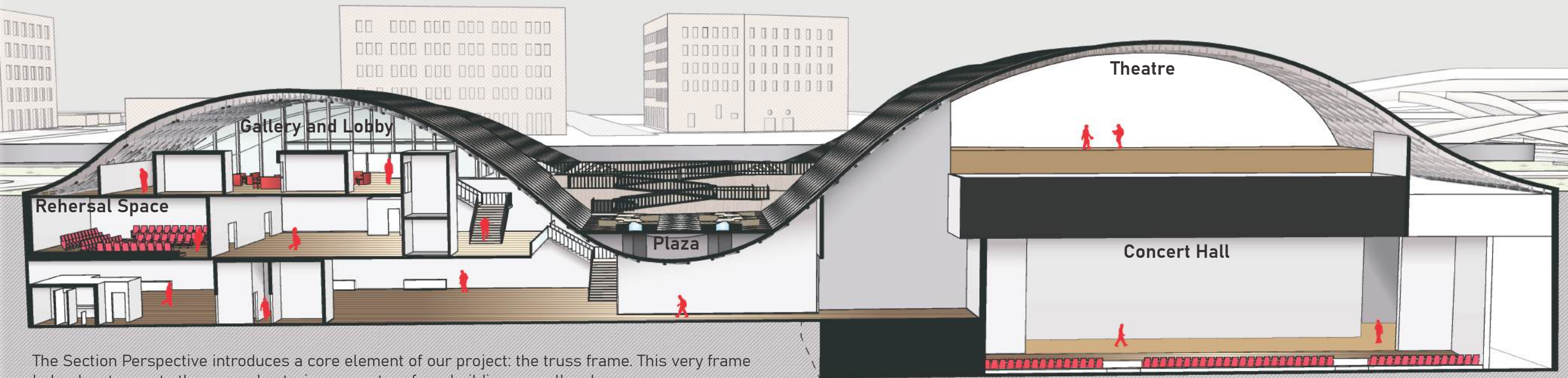


This diagram gives a helpful demonstration on how circulation flows throughout the site. When considering noise in general, there are various programs we decided to situate underground to either give them a sound barrier, or muffle the noise they produce, these include: Concert Hall, mechanical section of Building Services (as it will likely be a large noise generator), portions of the Production Shop, and the Rehearsal Space.



SECTION PERSPECTIVE, 1/32"=1"0" SCALE

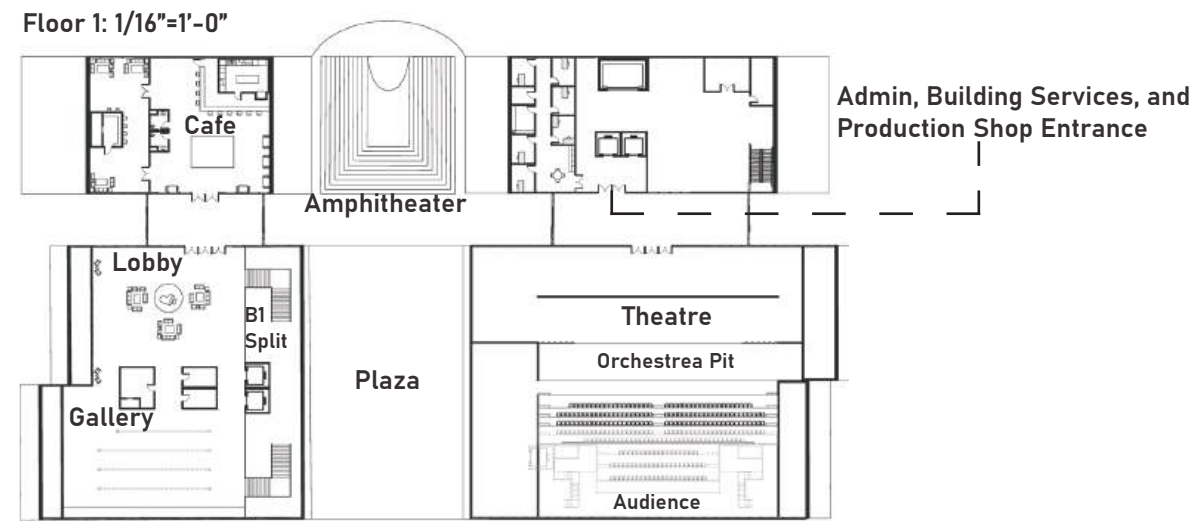
Sole Credit: Peyton Ray



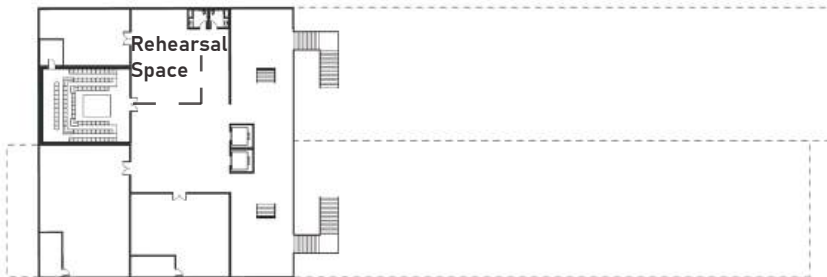
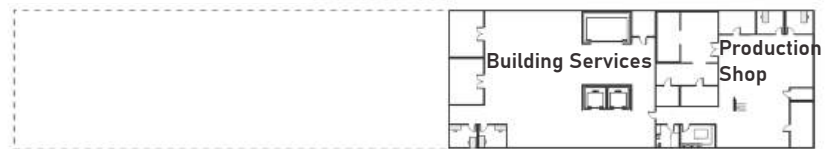
The Section Perspective introduces a core element of our project: the truss frame. This very frame helped us to create the general exterior geometry of our building as well as how our programs would be placed. As the frame is an s-curve, it helps to generate programs under the loops, and above them. This section also helps to further illustrate how people move from the ground floor down into the Theatre and Concert Hall.

PLANS

Floor 1: 1/16"=1'-0"



Basement Floor 1: 1/16"=1'-0"



Basement Floor 2: 1/16"=1'-0"



EXTERIOR PERSPECTIVES





Ampitheatre Space



Plaza



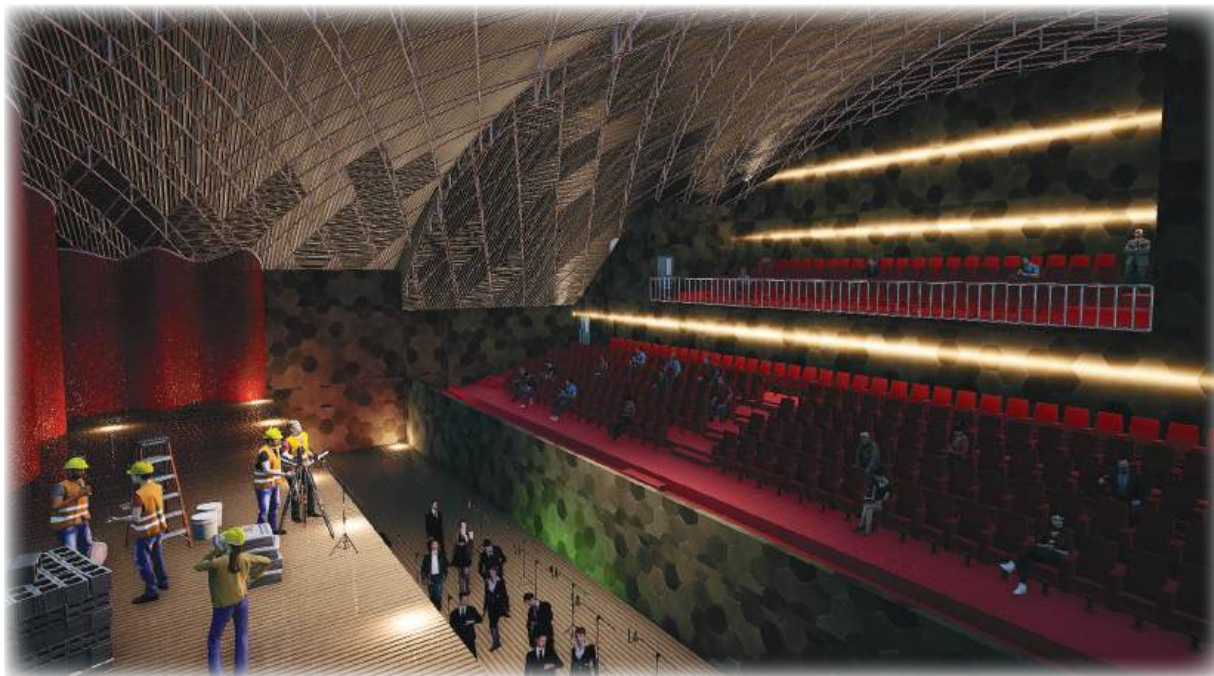
INTERIOR LOBBY & GALLERY SHOTS

The steel truss under-belly aforementioned is ever more visible here. The final, bottom shot shows the open gallery space, open to interpretation in terms of exhibition setup.

ENTERTAINMENT SPACES

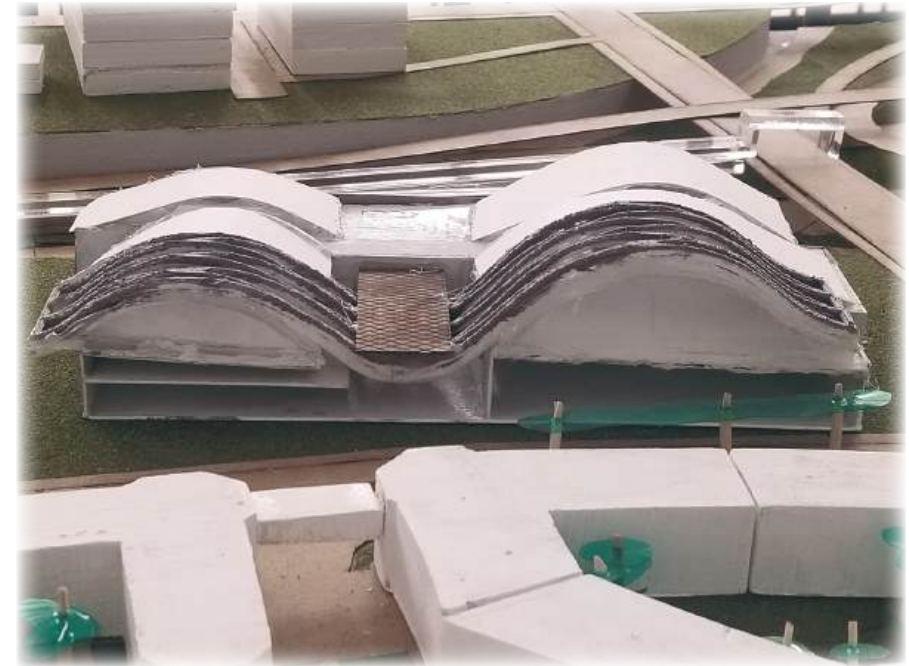


Concert Hall



Theatre

PHYSICAL MODEL

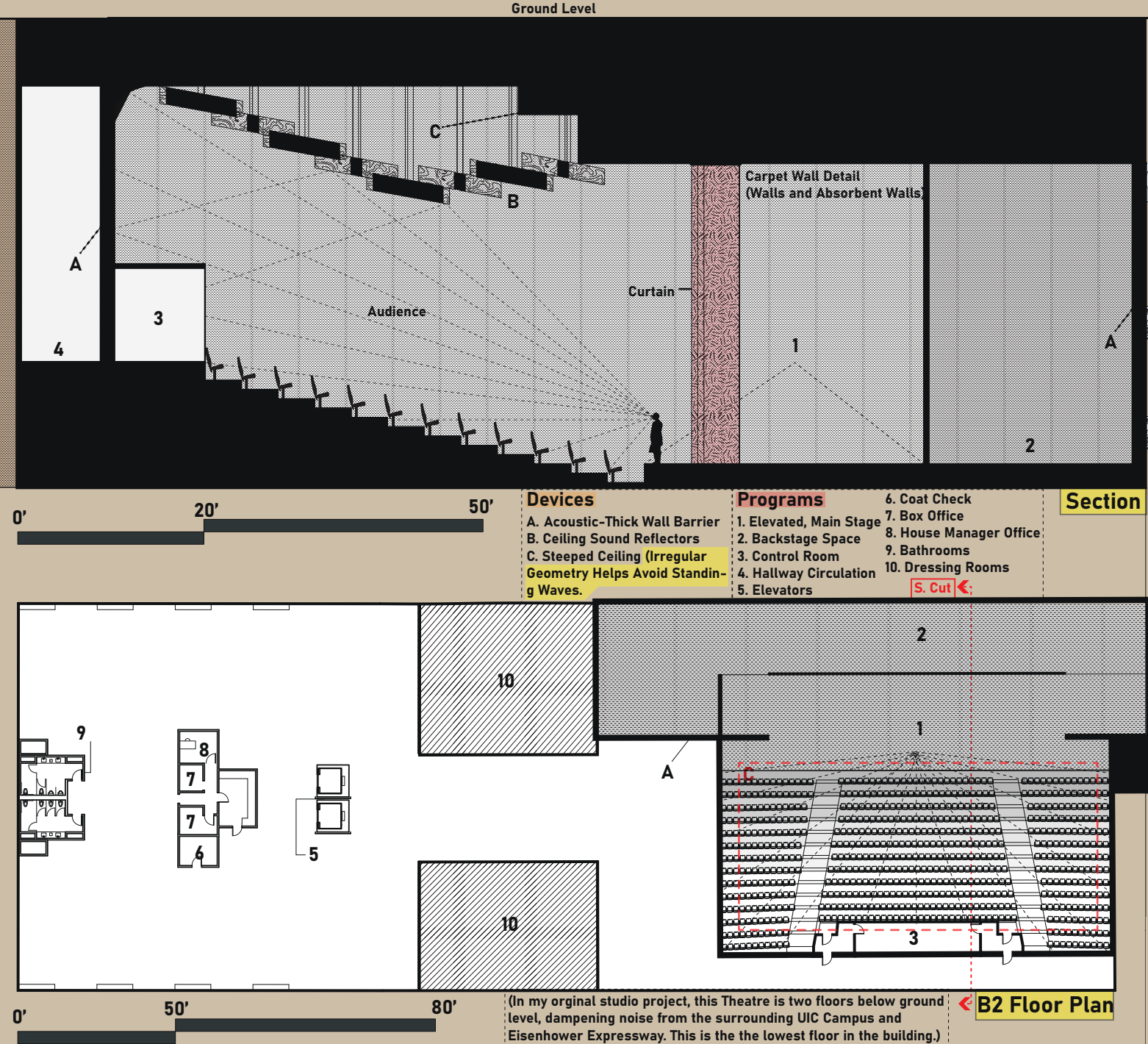


These pictures show our physical model in-situ with the site, not made by me or my partner, but by other fellow studio-mates. We included a sample of the truss structure here which was 3D Printed, using additional materials such as acrylic and chipboard to craft it.

ACOUSTIC THEATRE

ARC 332 BY: BRUCE SWETMAN
FALL 2024 FINAL

Using my final and previously shown project from Jonathon MacGillis's studio, I continued upon my underground Concert Hall as a reference in adding sound devices to make it acoustically sound.



Calculations For Reverberation Time

Required Reverberation Time for Theatre: 1-1.5 seconds

Recommended Reverberation Time: 1.8-2 seconds

Reverberation Time Equation in Design

$TR = k \times V / (\text{Sum of } A \times \text{Absorption Coefficient})$

Materials, SA, and AV

Floor (Main Auditorium & Backstage): Carpet, heavy on concrete (A= 15,300 sq.ft, AV= 0.73)

Ceiling: Parallel glass-fiberboard panels, spaced 6 1/2 in apart (A= 15,300 sq. ft, AV= 1.33)

Walls: Carpet, heavy on 5/8 in perforated minstel fiberboard (A= 2300 sq. ft, AV= 0.96)

Absorbent Walls: Carpet, heavy on 5/8 in perforated minstel fiberboard (A= 15,300 sq. feet, AV= 0.96)

Reverberation Time

$TR = (0.5 \times 350,000) / (15,300 \times 0.73) + (15,300 \times 1.33) + (2300 \times 0.96) + (15,300 \times 0.96)$
TR= 3.6 seconds, unfortunately the best possible time and materials with a theatre this large.

Calculations for Reflector Size

Size of Wavelength=Speed of Sound/Cycles Per Second

$1130/250 = 4.4 \text{ ft}$

$4.4 \times 2 = 8.8 \text{ ft}$

LUMINARY TASK LIGHTING FIXTURE

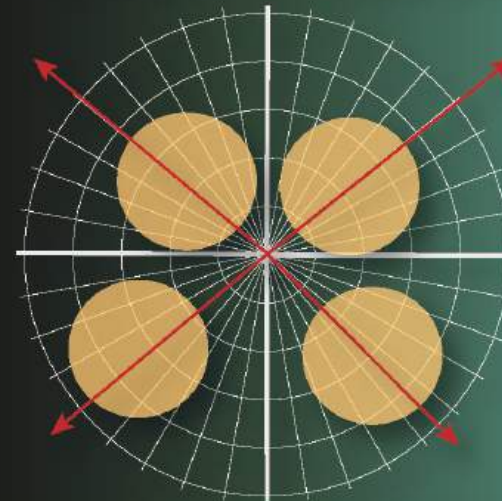
ARC 332 BY: BRUCE SWETMAN
FALL 2024



This fixture is made purely out of R-10 Insulation Foam Board, additionally using chipboard to help stabilize the base and make it firmer. This light would be used to serve as decoration or to help with task-lighting, envisioning it to be positioned on a desk. I decided on an open cage for the light bulb, using the horizontal sidings as a way for lighting to split, creating an interesting effect.



Candle Power Distribution



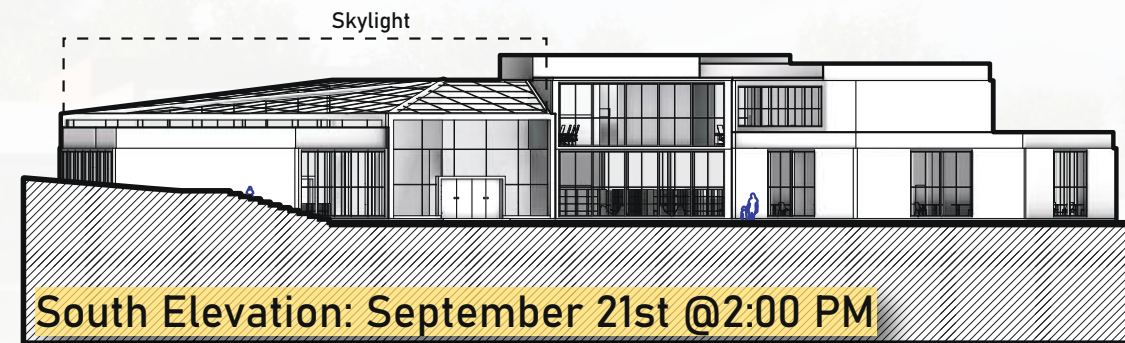
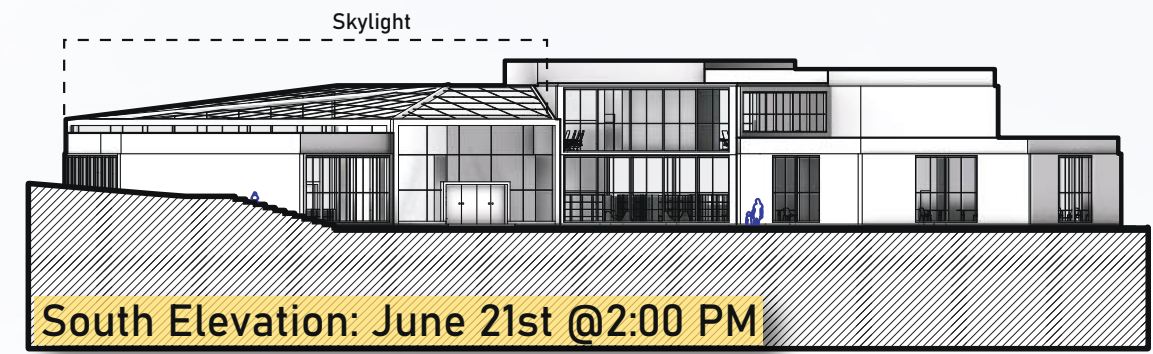
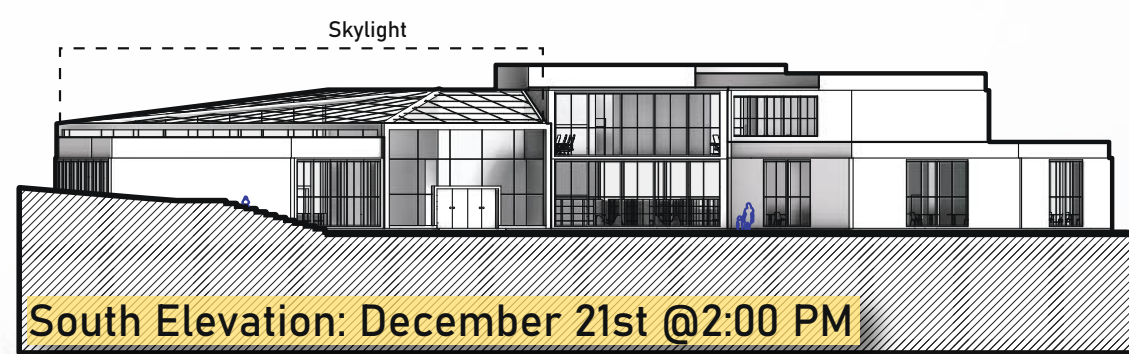
The lighting from the fixture primarily sections off in four sections of lighting, almost like specific spotlights due to how the "cage" containing the bulb was made. Light from the bulb does not reach the bottom base.

CHILDRENS LIBRARY DAYLIGHTING

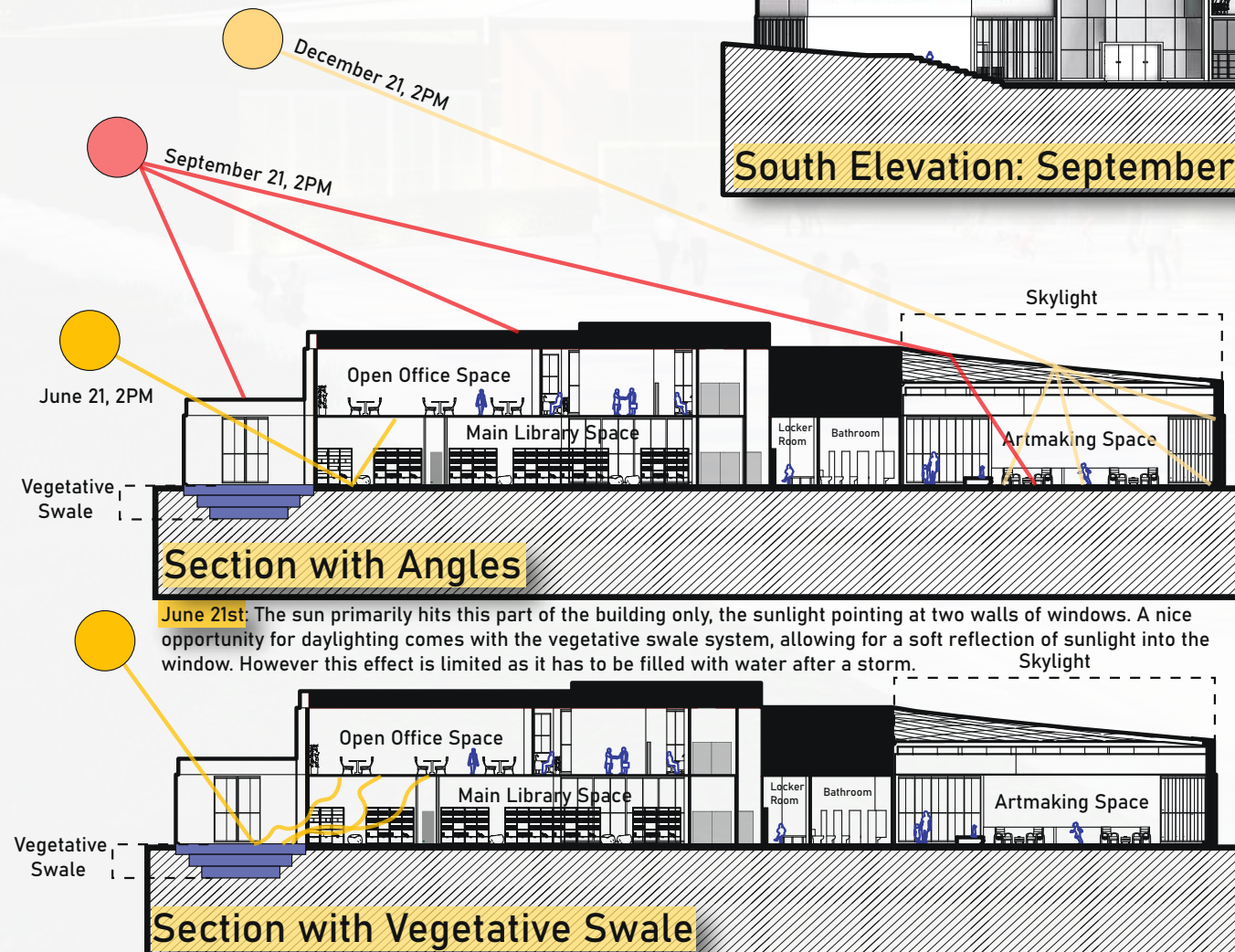
ARC 332 BY: BRUCE SWETMAN
FALL 2024

Drawing upon my final project from Seda's Spring 2024 Final, I chose it to analyze further with daylighting methods. I focus primarily on the building's South Elevation, seeing the changes in lighting on December 21st, June 21st, and September 21st, all at 2pm.



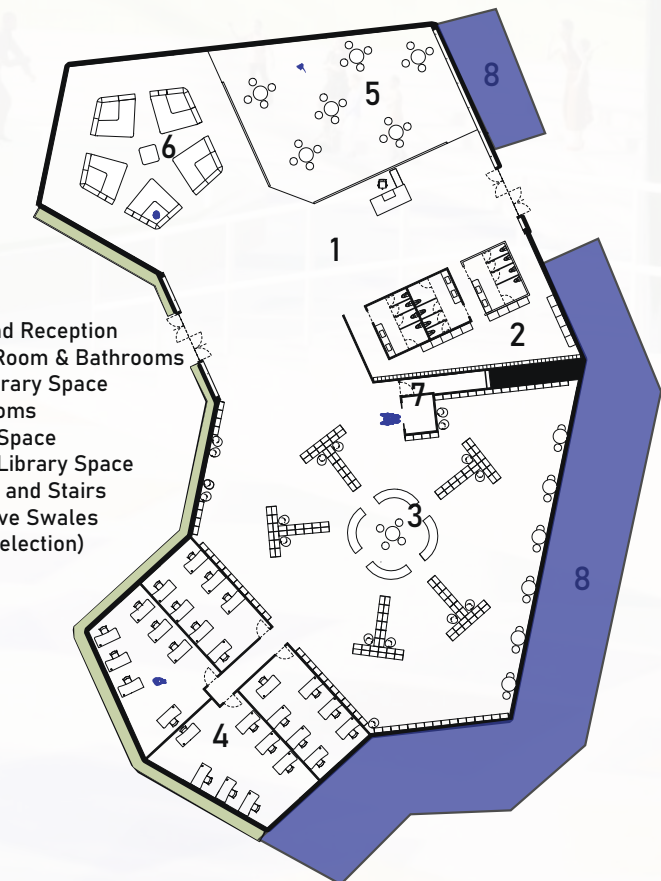


I specifically chose my final project from Seda Kayim's studio as I used a lot of windows in this design. I truly wanted to maximize natural lighting in this space accompanied by a playful, geometric form that appeals to children as it is a Children's Library. It is a response to the surrounding community of Davis Park, Lexington, Kentucky. The skylight in the design is its main highlight, giving a wide range of natural light to the lobby space, making it feel open and breathable.



Dec. 21st: Similarly to September, sunlight primarily affects the far left and right portions of the building at this date. The strong sunlight heavily targets the far right of the building where the skylight is. This skylight is used at its full potential this date, bringing natural lighting into the main lobby and adjacent programs.

Sep. 21st: Sunlight primarily affects the far left and right portions of the building at this date. The stronger sunlight is seen to affect the far left, to the far-right middle of the building, extending a bit into the skylight.

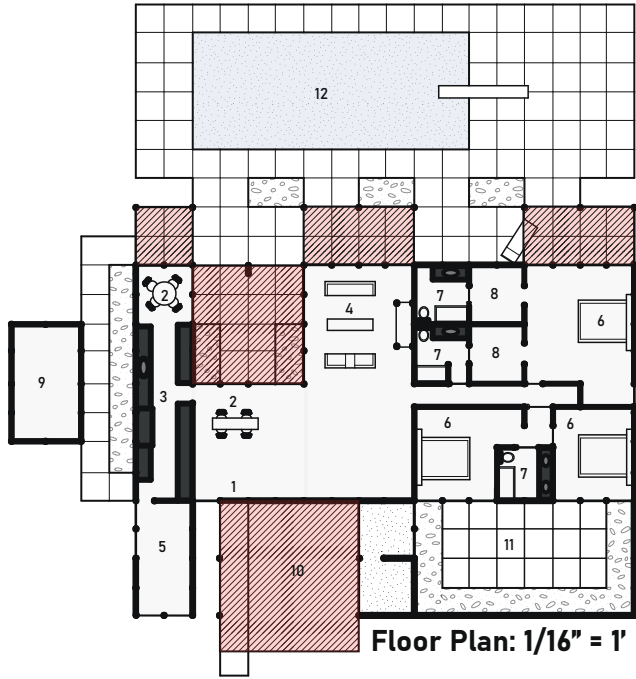


This building utilizes a vegetative swale system as the surrounding sight is lower-lying, making it prone to flooding, alleviating waters. When the swales are full after a storm, you can expect a nice daylighting effect, allowing soft lighting to reflect off of the water in the swales.

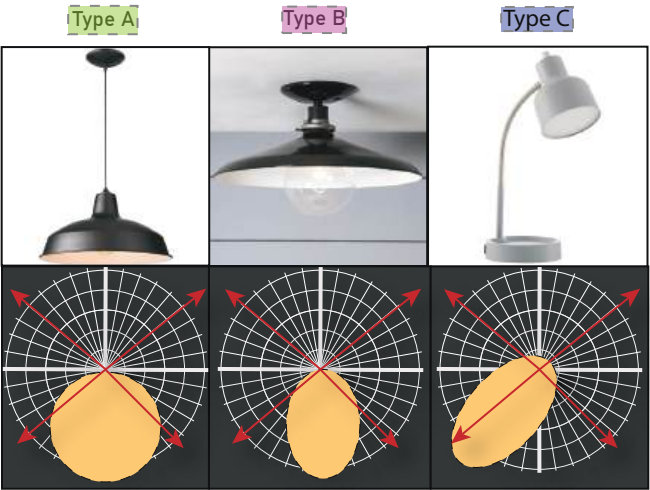
FOOT CANDLE STUDY

ARC 332 BY: BRUCE SWETMAN
FALL 2024

In conjunction with my ARC 231 (taught by Jordan Hines) "Case Study House 18" (built by Rodney Walker) project from Fall 2023, I further expanded upon my floor plans and sections to understand the residential settings of foot candle usage. For this case study house, I determined the necessary foot candle levels based on the different areas in the house, giving the appropriate calculations for the luminaries.



- Footcandle Requirements:
- 1. Entry- 20 FC
 - 2. Dining Room- 30 FC
 - 3. Kitchen- 70 (Task)
 - 4. Living Room- 30 FC
 - 5. Studio- 70 FC
 - 6. Bedrooms- 20 FC
 - 7. Bathrooms- 50 FC
 - 8. Dressing Rooms- 30 FC
 - 9. Service Yard- 20 FC
 - 10. Driveway- 20 FC
 - 11. Patio- 20 FC
 - 12. Pool
- Awning



Calculations for # of Luminaries in Spaces

Type A: Living Room (Ambient Lighting)
LED Semi-Flush Mount
Area: 273 sq. ft Length: 17.1' Width: 15.9'
RCR: $\frac{5(9)(17.1+15.9)}{273} = 5.44$
C.U. = .51 M.F. = .7
of Luminaries: $\frac{273 \times 30}{3400 \times 0.41 \times 0.7} = 9$
Usage of 9 LED Semi-Flush Mount Lights across the living room space.

Type B: Kitchen (Appliance Task Lighting)
Distance between fixture and work plane= 9 feet
CP = FC x D^2
CP = 70x7^2= 3430
Usage of 3 LED Pendant Lights near the stove, fridge, and counters.

Type C: Bedroom (Desk Task Lighting)
Distance between fixture and work plane= 8 feet
CP = FC x D^2
CP = 20x8^2= 1,280
Usage of one luminaire LED desk lamp in bedroom corner.

